

The United States MILLER

Volume 11.—No. 2.

MILWAUKEE, JUNE, 1881.

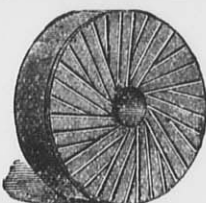
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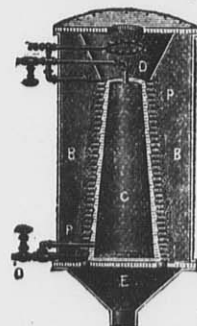


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Important Notice
For millers about to purchase Roller Mills. We take this method of informing our friends that we have made arrangements for the exclusive manufacture of the

Stevens Roller Mills,

UNDER THE PATENTS ISSUED TO JNO. STEVENS.

The work done by the Mills is far superior to that of any other machine known in this country or Europe.

License to use the machine, and process, will be issued by the patentee for each mill furnished by us.

Old rolls, or those with inferior dress, recut with the Stevens dress at reasonable prices.

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To write to some other miller using the Case Purifier. There is no doubt about its being

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It is about one half cheaper, capacity considered, than any Purifier in the market.

We would rather have it than two Purifiers of any other make. W. P. HAMBAUGH & CO., Clarksville, Tenn.

We believe it to be the best machine on the market.

BALDWIN & EULLER, Ottawa, Kansas.

Can govern it to do anything we want. It could do no better.

CAMAN & McFARLAN, Urbana, Ohio.

For all particulars address

CASE MFG CO., Columbus, O.

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You can successfully purify the chop from either Stone or Rolls with the

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THIRTY DAYS' TRIAL.

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To meet the frequently expressed wants for SMALL and CUSTOM MILLS, of 50 and 60 bbls capacity and under, we have just planned, put under construction and applied for a patent, a Combination Electric Purifier by which middlings can be completely finished on a single machine and by a single operation as thoroughly as by a system of three purifiers.

A full description of this new Combination Purifier with the prices of different sizes is inserted in a new issue of our descriptive circular, which will be sent out from the New York office on application.

We desire to state May 25th, 1881, we have shipped our Electric Purifier to the following parties, at central points, where they may be seen in regular use by millers desirous of investigating the Electric System:

Atlantic Mills.....	Brooklyn, N. Y.	M. C. Dow & Co.....	Cleveland, O.
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Norton & Co.....	Chicago, Ill.	Lyman & Co.....	Norfolk, Pa.
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Address all communications to

JOHN RICE, Manager Electric Purifier Co.,

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Cockle Separator Manufacturing Co.,
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Manufacturers of the well-known

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Built also in combination with

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Millers are cautioned against buying infringing machines. Write for our new illustrated catalogues describing machines. [Mention this paper,]

Over 1,000 of these Turbines

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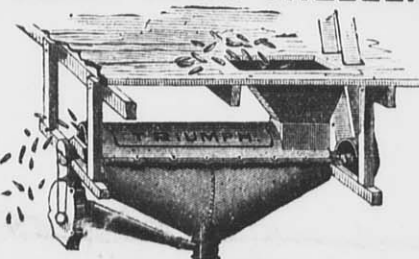


It has tight shutting and easily operated Gate: gives more power for the water used, and will last longer than any other Turbine. Large shop, with improved tools for making this wheel and machinery. Illustrated Pamphlet and Catalogue with prices sent free by

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In manufacturing Picks I use only the best steel made, and my long experience enables me to turn out work unexcelled. Hundreds of testimonials on file in my office show that my Picks have given entire satisfaction.

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No. 167 W. Kinzie Street,

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Picks will be sent on 30 or 60 days' trial to any responsible miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada. Send for Circular and Price List.

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CORK, IRELAND.

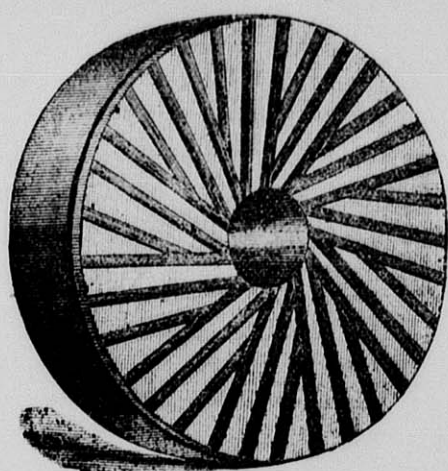
American correspondence solicited.

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At Less than Cost.

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Having decided to close out our entire Mill-Stone Stock, we offer to the Milling public our stock of Stone, which are the finest ever brought to this country, at less than cost.

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Early orders will receive prompt attention.

Do not delay as this stock must be disposed of at once.

EDW. P. ALLIS & CO, Reliance Works, Milwaukee, Wis.

The United States MILLER

Volume 11.—No. 2.

MILWAUKEE, JUNE, 1881.

Terms: \$1.00 a Year in Advance.
Single Copies, 10 Cents.

The Gamgee Zeromotor.

[By B. F. Isherwood, Chief Engineer, U. S. A.]

From observations made by Professor Gamgee in the experimental working of this machine, he deduced the possibility of what he terms a zeromotor, in which, by means of properly adapted apparatus invented by himself, the heat in water or other objects at ordinary atmospheric temperatures may be utilized to vaporize liquid ammonia under very considerable pressures, but within the control of known means of retention. The high pressure gas thus obtained being used with the greatest practicable measure of expansion on a working piston generates power, becoming by that very expansive use greatly refrigerated and diminished in bulk, and partially liquified at the end of the stroke of the piston, when it is exhausted and then returned by a method invented by Professor Gamgee to the ammonia boiler whence it came. The cycle is thus a closed one; no material is lost, and no heat is rejected in matter leaving the engine. The work done by the engine is due to the difference in bulk of the material when it enters and when it leaves the boiler, that difference being caused by the heat derived from water or other natural objects in the ammonia boiler and from the refrigeration resulting from the transmutation of a portion of this heat by the engine into the mechanical work performed by the latter. That this difference of bulk exists is indisputable, and if the proper mechanism can be contrived to utilize it, the idea of the zeromotor becomes realized. It will be observed that this power has not been obtained from artificial heat produced by the combustion of fuels, but from the heat of natural objects at ordinary atmospheric temperatures, and therefore costing nothing in money. This is made possible by the fact that liquid ammonia gasifies under considerable pressure at ordinary atmospheric temperatures, the sole difficulty in constructing the zeromotor being to find the means of economically condensing the gas after it has been used on a piston. Were it not for the refrigeration due to the expansive working of the gas, the condensation would have to be obtained by the application, externally to the condenser, of artificially produced cold, and the zeromotor could not be made a commercial success. It is only by obtaining the lower limit of temperature from the action of the engine itself, while the higher limit is furnished without money cost by natural objects at atmospheric temperatures, that commercial success becomes possible.

The purpose of the Department in ordering and examination of Professor Gamgee's ice making machine was not to obtain an opinion on its ice making merits, but one as to whether his observations on the behavior of ammonia in the process were sufficiently accurate to warrant his inference of the practicability of constructing a successful zeromotor for industrial uses—a motor, in short, destined to supersede the steam engine. Accordingly the undersigned closely investigated the working of the apparatus. The fact of liquid ammonia gasifying at ordinary atmospheric temperature under very high pressures, and of that gas undergoing very great refrigeration when used expansively in doing work, are not called in question by anyone. Both are well-known phenomena. The special fact to be observed was whether any part of the ammonia which entered the cylinder as a gas, left it as a liquid, and so far as the form of the apparatus allowed any observation to be made, such appeared to be the case. The possibility of the invention of a new motor of incalculable utility would seem to be established, and in view of the immense importance of the subject to the Navy and to mankind at large, I strongly recommend it to the serious attention of the Department, suggesting further that whatever facilities the Department can, in its opinion, consistently extend, be allowed to Professor Gamgee for

the continuance of his important experimental inquiries in the Washington Navy Yard. He is most anxious to bring his invention, with the least possible delay, to a crucial test by the completion of the necessary mechanism, and its submission to any board of experts which may be ordered to experimentally ascertain its merits. For this purpose he proposes to use such parts of his present ice making machine as can be recombined in his zeromotor, adding the other necessary parts, and thus producing, with but little loss of time, an embodiment of his idea that will by simple trial show whether an unquestionably correct theory has been successfully reduced to practice.

Professor Gamgee has perfected the calculations and drawings for the mechanism required to give practical effect to his invention, and there remains only to execute the mechanical work. He proposes to use the steam cylinder of his ice making machine as the ammonia cylinder of his new motor, the present ammonia condenser, and the present ammonia boiler as a low pressure boiler, adding another ammonia boiler as a high pressure boiler. These, together with the ejector between the condenser and the low pressure boiler, a small pump for pumping liquid ammonia from the low pressure to the high pressure boiler, etc., will constitute the zeromotor—a machine, as will be apparent from this brief description, of the simplest, cheapest, and most manageable kind.

In the high pressure boiler the liquid ammonia will be gasified by the heat in water of atmospheric temperature to the pressure normal to that temperature. In the low pressure boiler ammonia is kept at a considerable less tension than in the high pressure boiler, and with this lower pressure ammonia gas the engine is operated, the gas being used as expansively as practicable and made to do work during its expansion, thereby becoming refrigerated, greatly reduced in bulk, and partly liquified. Immediately on being exhausted the cooled and shrunken gas, and whatever liquid of condensation may be mingled with it, are discharged by the ejector from the condenser into the low pressure boiler, the ejector being worked by the higher pressure in the high pressure boiler. As a result the low pressure boiler is continually receiving ammonia and heat from the high pressure boiler. This excess of ammonia in the liquid form is pumped by an ordinary pump from the low pressure back to the high pressure boiler, while the excess of heat is continuously being converted into the mechanical work done by the engine. There is also the extinction of such part of the heat in the high pressure ammonia gas working ejector as is due to the work done by it in forcing the contents of the condenser into the low pressure boiler. Of course the cylinder, heat condenser, the low pressure boiler, and their connections are protected from receiving heat from the atmosphere and surrounding objects by a non-conducting substance.

The plan proposed is far from chimerical. It is based on well demonstrated thermodynamical principles. The whole is definite and precise, both in theory and mechanical detail, nor can it be shown, *a priori*, that there is not a fair prospect for success. There can be no doubt that the product of the pressure and volume of the contents of the condenser which are to be forced into the low pressure boiler, is less than the product of the pressure and volume of the ammonia gas which leaves that boiler to operate the engine, and that this difference which has not been produced by the external application of artificial cold, but by the working of the machine itself, is available for the production of power for industrial purposes. All that remains is to give the system a practical test in order to ascertain whether the mechanism proposed will act efficiently enough to realize the expected re-

sult. Should this prove to be the case, the steam engine will, within the near future, be certainly superseded by the zeromotor, for the great item of coal, whose cost is the principal expense of operating the former, will be wholly eliminated with the latter. If it can once be practically shown that a very much cheaper, lighter, and a far less bulky mechanism than the steam engine, including for the latter its boiler and, in case of steam vessels, the coal bunker and its contents, can be employed for the production of power to any amount without the use of fuel, nothing can prevent its introduction into general use for all industrial purposes, with the vast result of a great cheapening to mankind of every article of manufacture, from the daily bread of the poor to the luxurious textures which robe the rich. The whole world is concerned in the solution of this problem, and the poorer the person the greater is his interest in it. The source of heat for the steam engine is the continually diminishing supply of coal—a diminution that will be severely felt some centuries hence; but the source of heat for the zeromotor is as inexhaustible as the sun himself, and will last undiminished as long as he shines.

The success of the zeromotor is of more importance to the Navy of the United States than to the navies of the great maritime powers of Europe with which it may come into collision, because those powers have colonies and coaling stations on the farthest shores, while the United States possesses neither, and would consequently, in naval warfare, be at great disadvantage for want of coal—its navy, as a rule, having to render service within a reasonable distance of its own coasts the sole basis of supplies. If coal, however, can be dispensed with, we are at once placed on an equality in this respect, and our cruisers enabled to penetrate the remotest seas as easily as those belonging to countries having possessions there.

The enormous importance of a motor capable of superceding the steam engine and furnishing power without the combustion of coal can be estimated from the fact that it would produce an industrial and consequently social and political revolution equal to what was effected by the introduction of the steam engine. The whole of modern society is based on the steam engine which mainly has made the difference between the ancient and the present world, for our civilization would be impossible without it. It is the inanimate slave which performs the labor of mankind, freeing them from the greater part of their drudgery and giving them the time and means for culture.

I have ventured these few remarks to show the nature and scope of Professor Gamgee's invention, which is not that of a machine for the application of power, but for the immensely more important purpose of generating power itself, so that, strictly speaking, it includes as a basis all other machines. I have wished to show this in order to make clear how different is his invention from those of others who may ask to have their apparatus tested in the Navy Yard, and to bespeak for it the most favorable consideration of the Department.

Professor Gamgee and able assistants—among whom is Mr. W. E. Sudlow, an accomplished mechanical engineer, thoroughly versed in the theory and practice of his profession—are well acquainted with the difficulties to be overcome. They are quite aware of all the objections that can be raised, and have well considered the means of obviating them. The subject has been carefully studied, and there are brought to bear upon it the requisite scientific and engineering information necessary to give it an exhaustive treatment. His engine, like the steam engine, is a heat engine and produces power by the conversion of heat into mechanical work, the same quantity of work consuming in both cases the same

quantity of heat, but with this immense practical difference, that the heat for his zeromotor is freely furnished to hand by nature, while for the steam engine it has to be excavated from the depth of the earth and afterwards handled and transported by expensive manual labor.

What is now mainly desired is that Professor Gamgee may be permitted to prosecute his experiments at the Washington Navy Yard to a conclusion, and there bring his engine to a practical test with as little delay as possible. Should the Department be able to grant this, the favor will be well and properly bestowed in the interest of the Navy and of the world.

M. Muntz and the Storage of Grain.

The practice of storing grain in pits, lined, perhaps, with masonry or pottery, can be traced back to very remote antiquity. In cold and temperate climates the problem of storage is more difficult. A common system is the use of large metallic reservoirs in special buildings; they are charged from above and emptied from below. M. Muntz has for three years past been studying the phenomena that occur in the storage of grain both by observation of the large stores of the Paris Omnibus Company and laboratory experiments. Grain placed in air, it is known, absorbs oxygen and gives out carbonic acid; and even when air is excluded grain still liberates carbonic acid through intracellular fermentation. The carbonic acid formed, in any case, measures the alteration and loss. Now, comparing the influence of the renewal of air with that of confined air, M. Muntz found that in the former case the grain liberated about ten times more carbonic acid than in the latter. In contact with air the carbonic acid formed is always inferior in volume to the oxygen absorbed. There is a secondary and incomplete combustion like that in germination of oleaginous seeds. The oxygen is chiefly fixed by fatty matter. As to moisture, grain usually contains 11 to 19 per cent of water. Very dry grain gives little carbonic acid; in consequence, it is exposed to ravages of insects, which do not then meet with an asphyxiating atmosphere. The proportion of carbonic acid increases very quickly with the degree of moisture, and beyond 13 to 14 per cent of moisture the progression is enormous. The proportion also increases very rapidly with temperature till about 50 deg. Here there is a stoppage; but on heating further the combustion acquires fresh energy. M. Muntz distinguishes two phenomena of combustion—one of physiological order, corresponding to respiration; the other purely chemical, anæsthetics, such as sulphide of carbon, diminish, without stopping, the formation of carbonic acid.

THE MAHOGANY TREE.—Full-grown, the mahogany tree is one of the monarchs of tropical America. Its vast trunk and massive arms, rising to a lofty height and spreading with graceful sweep over immense space, covered with beautiful foliage, bright, glossy, light and airy, clinging so long to the spray as to make it almost an evergreen, present a rare combination of loveliness and grandeur. The leaves are very small, delicate and polished like those of the laurel. The flowers are small and white, or greenish yellow. The mahogany lumbermen, having selected a tree, surround it with a platform about twelve feet above the ground, and cut it above the platform. Some dozen or fifteen feet of the largest part of the trunk are thus lost; yet a single log not infrequently weighs from six or seven to fifteen tons, and sometimes measures as much as seventeen feet in length and four and a half to five and a half feet in diameter, one tree furnishing two, three or four such logs. Some trees have yielded 15,000 superficial feet.

SUBSCRIBE for the U. S. MILLER.

UNITED STATES MILLER.

PUBLISHED MONTHLY.
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ANNOUNCEMENT:

Wm. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

MILWAUKEE, JUNE, 1881.

We send out monthly a large number of sample copies of THE UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE MILLER to you for one year.

MILLERS' DIRECTORY.

All mill-furnishers, flour brokers or other parties desiring to reach the flour mill owners and millwrights of the United States and Canada, should have a copy of the above named work. It contains about 15,600 names with Post-office addresses, and in many cases (notably in Wisconsin and Minnesota) gives the number of runs of stone, sets of rollers, and kind of power used, or the capacity in barrels. A limited number of copies only have been printed. Upwards of 200 of the leading mill-furnishing houses and flour brokers in this country and several in Europe have already secured copies. Send in your orders at once. Price Five Dollars, on receipt of which Directory will be forwarded post-paid by mail. Address,

UNITED STATES MILLER,
MILWAUKEE, WIS.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

Millers' National Association.

EIGHTH ANNUAL CONVENTION.

St. Louis, Mo., April 22, 1881.

The Eighth Annual Convention of the Millers' National Association will be held at Pacific Hotel, Chicago, on Tuesday, June 7th, 1881. This will be a Delegate Convention, and the Presidents of the several State associations are requested to appoint five representatives to attend the meeting. All of our members in unorganized States are invited to take part, as also such members from organized States as happen to be in Chicago on that day.

Millers who are not members of the National Association, or those who are behind in their dues are not expected.

No change is made in the members composing the different committees last year.

GEORGE BAIN, President,
S. H. SEAMANS, Sec'y.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

Nearly 40,000 immigrants per month have arrived in the United States for the past nine months. For the nine months, ending March 31st 1881, 357,396 immigrants arrived against 214,596 for the same period in the year 1880. The total for ten months ending April 30, was 446,812.

THE BECKER WHEAT BRUSH.—We call the attention of all millers who desire to have well-cleaned wheat to the new advertisement of the Becker Wheat Brush in this paper. The Becker Brush has an established reputation all over the country. Those about to put in new cleaning machinery should not fail to write to the Eureka Manufacturing Co., Rock Falls, Ill., for circulars and price lists.

THE STEVENS ROLLS.—We desire to call the attention of millers in Wisconsin and elsewhere in the Northwest, to the advertise-

ment of Capt. E. W. Pride of Neenah, Wis. He represents the Stevens Roller interest in this section and will be pleased to correspond with all parties contemplating making changes in their mills. Mr. Pride is also able to supply all sorts of mill furnishing goods promptly and at low prices. If you need anything in the milling line, write to him.

SUBSCRIBE for the UNITED STATES MILLER.
Only \$1 per year.

The Ohio State Millers' Association.

AKRON, O., May 16, 1881.

There will be a meeting of the Ohio State Millers' Association at the Forest City House, Cleveland, Ohio, on Tuesday, May 31st, at 10 o'clock A. M., for the purpose of electing officers of the Association, the appointment of delegates to the Millers' National Association, to be held in Chicago, June 7th, and for the transaction of such other business as may come before the meeting.

You are earnestly requested to be present, whether a member of the Association or not, and a general invitation is extended to all millers in the State to attend the meeting.

F. SCHUMACHER, Pres.

R. COLTON, Sec'y.

The Milwaukee Wheat Market.

A COMPREHENSIVE REVIEW OF ITS COURSE DURING THE MONTH OF MAY.

[Written expressly for the UNITED STATES MILLER.]

JUNE 1, 1881.—The wheat market has undergone a decided change during the past ten days, the fact having been developed that the stocks here and at Chicago were held principally by one operator, who was also taking "futures" freely, for whatever month offered, up to September, inclusive. This induced an active demand to cover the short interest and also for speculation, resulting in a sharp advance of about ten cents per bushel, with frequent fluctuations of 2@3 cents, varying according to the apparent or supposed probabilities of the success of the movement.

Rumors were rife yesterday that the operator referred to was "unloading," and prices broke in consequence, reaching a decline this morning of 5 cents per bushel from the highest point. Later, however, a good buying demand appeared, and the market steadily advanced, and closes strong at \$1.11 for July, the principal trading being now in that delivery. Cash No. 2 is 2 cents under July.

Crop reports from the winter wheat States seem to confirm the belief that a serious deficiency in the result will exist as compared with last year, and it is placed by some estimates as high as sixty million bushels. Official estimates in three or four of the most important States place the yield at 25 to 30 per cent less than last year. In the spring wheat States the present outlook is good, with a diminished acreage, however, of about 10 per cent.

It is worthy of note that a much larger advance has taken place in prices for distant futures, both in Western and in seaboard markets, than for the near futures. The latter were selling at a discount of from 3@10 cents under the former, according to time; but are now very close together. August delivery is selling here to-day at the same price as July, and September is about 2 cents under August.

E. P. BACON & Co.,
Commission Merchants.

SELF-INSURING MILLERS.—The fire and the insurance problems are among the most serious ones with which our millers have to deal. They will not build fire-proof mills and can not obtain a fair amount of insurance on favorable terms. Many have been driven to carry their own risks and some have been rendered insolvent by fires that have most bitterly rebuked this dare-devil policy. Instead of each one insuring himself, why can they not insure each other? This idea has been practically tested by German millers for over 100 years. In the last half of the last century some 200 German millers combined in a mutual insurance society. Each one paid into the protection and indemnity fund 15 per cent of the sum for which he insured his mill. This single payment guaranteed him that amount of insurance so long as he was in the milling business. This indemnity fund is now enormous and for years past only new mills have paid premiums. Besides this the company now pays dividends to its members out of the annual interest realized from the accumulated fund. We respectfully submit this as a good subject for consideration by the next Millers' Convention.—St. Louis Miller.

Mill Notes.

[For the UNITED STATES MILLER.]

One of the obstacles to success in milling is the over heating of the stones and of the chop. For this there may be a great many causes. One that is not always considered is that the burrs are too high in the eye. You remember the old proverb, for want of a nail the shoe was lost, and so on. Well it has many parallels in the modern mills. For "nail," read "oil can," and for "shoe," read "cool running," and for "horse," read "cash" with a capital C. The mill spindle should be kept well oiled, because not only does the increased friction necessitate a greater amount of power to drive the stones, but the spindle itself becomes abraded, and may heat so as to stick in the step.

How many men are there traveling about the country putting in patent knockers guaranteed to knock spots out of every other device made, invented, or contrived, to knock the miller from the deep hole of poverty and hard work to the proud and lofty pinnacle of success and affluence. But if I wanted to make specky flour I would have knockers on both ends of every reel. Knockers have been tried very often, and while they fail to clear the bolts properly, they make specky flour. The best way for a miller to keep his cloths clear is to buy good silk to start with. Some dealers take a light quality of cloth and represent it as a standard number of good cloth, having a better cloth, the extra numbers of which they call extra heavy, and a third brand, all numbers of which they call double extra heavy, when in fact, they have only the standard numbers of three different brands of cloth, and not three qualities of the same brand.

In comparing two brands of cloth we find sometimes that one brand will have more meshes than the other in the fine brands, while in the coarser numbers it will be the other way.

The stone is often blamed for the fault of the bolt.

Milwaukee Items.

The New Era Mills have recently added the new smoke consuming apparatus to their furnaces.

Fred. Smith, of Smith Bros., millwrights, will be employed most of the summer at Three Rivers, Mich.

The Northwestern Mills on the Canal have been changed over to a grain cleaning and mixing establishment.

There are now 24 grain cleaning and mixing establishments in the city, and some of the time all of them are running to their full capacity.

There is a strong probability that another large roller mill will be built on the Canal this year. The parties interested are negotiating for the ground to build it on, and will probably soon close the deal.

Henry Thien, an employe in a Milwaukee flouring mill, was recently convicted of having stolen a bag of flour from a baker named Guse. He declares that he is honest—that he did not steal the flour and that he has been done by a Guse.

Quite an important event has taken place in the past month in milling circles. The Milwaukee Milling Co., operating the mill at corner of Cherry street and the Canal, and B. Stern, proprietor of the New Era Mill on Washington street, have become incorporated into a stock company known as the New Era Milling Co., which will hereafter operate both mills. The daily capacity of both mills is about 1,100 barrels. Both mills are fitted up with the roller system.

Personal.

John F. Shoelkopf, a prominent miller of Buffalo, N. Y., paid a visit to Milwaukee during the early part of May.

C. D. Ingraham of Chicago, Ill., manufacturer of the well known Ingraham Grain Cleaning and Grading machinery, spent a pleasant hour in our sanctum May 6. Mr. Ingraham has just placed some of his large machines in operation in Milwaukee.

C. A. Wenborne, Esq., of Buffalo, N. Y., editor and publisher of *The Milling World* and *The Lumber World*, made us a short visit recently.

PHILO D. MICKLES, Esq., the well-known proprietor of the Denchfield patents, is in the west, on business. He was a welcome caller at the office of the U. S. MILLER.

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FROM EUROPE.

A Review of What the Continental Milling Press Has Said Lately.

PREPARED FOR THE ENTERTAINMENT OF THE READERS OF THE "UNITED STATES MILLER," BY OUR OWN GREEK HOLMO-PHILOS.

The Millers' Academy at Chemnitz—Flour-Dust Explosion at Wurzen—Electric Light for Farming Purposes—Tendency of Flour to Absorb Odors and Tastes—A Hungarian's Opinion on the French Importation of American Flour—Exorbitant Freight Tariffs in Europe.

THE AMERICAN GROUND-ROBBERS—TENNESSEE WHEAT, ETC., ETC.

The milling papers on the Continent have of late contained some articles really worth notice, and we will endeavor to give the essence of them in a somewhat condensed shape. Several late numbers of *Die Muehle* contained the article on the subject of *Roller Mills and the development of the Gray Roller Mills*, written for the UNITED STATES MILLER in January last by W. D. Gray, milling engineer, the inventor. The article was translated very well, and full credit given to the UNITED STATES MILLER.

It is with pleasure that we note also that *Die Muehle* strongly advocates the interests of the Millers' Academy at Chemnitz, which is now ready to receive pupils. I think that we should credit the Germans for their efforts for the encouragement of institutions for instruction. They make the scholars who are always welcome to us. We do the inventing and realize from the application thereof, and the Germans then put the formulae to it (the axb). Germany is a nation of schoolmasters, and if their productive capacities were not so greatly hampered by military incumbrances, we might have a strong nation to compete with in productivity. Americans will candidly admit that we are not always the inventors and that oftentimes Germans invent a new device which they cannot perpetuate on their side of the Atlantic. Then they resort to America, and have their machines built, tested and patented. May the Millers' Academy at Chemnitz prosper, and may such technical schools spring into existence in this country also. A millers' school in this country would benefit our mill-owners more than the Millers' Academy of Chemnitz will benefit mill-owners in Germany, for it seems that every child there is born with a penchant for emigration.

In *Die Muehle* (No. 11) Dr. Sellnick, of Leipzig, very well known for his sound ideas on the superiority of porcelain rolls for grinding middlings and obtaining sharp, live flour, describes the flour dust explosion which occurred at Gustavus Schoenert's mill in Wurzen, I. S., March 1.

Those who are familiar with the flour-mixing contrivances of Europe can readily realize the great danger of explosions to which the mill-employes there are constantly exposed. Imagine a disk 7 to 8 feet in diameter with numerous maple pins driven into it each projecting below the bottom side about 6 inches. Below this stationary disk is placed a revolving disk of the same diameter, into which pins are driven plentifully projecting on the upper side. These disks are about 7 inches apart, and the bottom one revolves from 200 to 300 times per minute. Flours of different colors are spouted on the lower disk through a hole about 16 inches in diameter in the centre of the upper disk. The flours are then well mixed and thrown out centrifugally in the shape of dust and dropped into a receiving chamber below. These machines are in fact atomizers. In this mill at Wurzen a gas jet was near the door of the flour chamber and when some man opened the door the jet fired the dust—a destructive explosion followed and the mill was turned into a heap of ruins analogous to the mill disaster in Minneapolis. The door had probably been opened many times before without disastrous results, but this time it proved fatal. The flour being mixed at the time of the explosion was of a soft low grade, most liable to burn, owing to a surplus of cellular tissue, and the Doctor thinks that a portion of the dust-cloud just reached the flame and did the deed. He suggested that it is advisable to place these dangerous atomizers into an adjacent building of light construction, as the destruction increases

with the obstruction. In this country we mix flours by spouting them into a conveyor and we get satisfactory results.

In *La Ligne de l'Agriculture*, Paris, we noticed a picture which, had it appeared in one of our American journals, would surely have aroused the European readers' sense of propriety and urged them to cry—Humbug! It shows a nocturnal harvest landscape. Two reapers are at work cutting the wheat—two wagons are carrying off the cuttings, and some men are stacking. The light is furnished by two electric lamps. The picture indeed illustrates a grand idea. It causes us to meditate on the glorious future in store for us when the "horny-handed grangers" will be provided with water-works and electric suns—when they will rain themselves if nature does not do so—when they will let the electric suns rise when the celestial one is "on a strike" behind the clouds. The lights shown in the picture are designed by M. Albaret, mechanical engineer, and are indeed well constructed. A portable engine carries a mast 25 feet in height in front of the stack, lightly built of tubes and wires, on the top of which the electric lamp is hung. This can be lowered to any desired point and the mast can be adjusted at any required angle. The electro-dynamic machine is applied on one side of the boiler. The portable engine is also to drive other machinery besides this. We believe that for certain purposes it will pay to use this portable electric light, but the farmer, we think, can do without it. The night dew will prevent the reapers from cutting properly—the light will not reach far enough to cover their rounds—the straw and hay must not be stacked nights as it is wet, and the other work done on a farm as plowing potatoes and planting and cultivating corn, threshing, etc., can be done by daylight. The farmer is not in such a hurry with these jobs. If he was he would be obliged to have gangs of horses and men especially for night service.

In the *Oesterreichische-Ungarische Mueller*, of Vienna, we find an article of interest entitled "Precautions to be taken in shipping or storing flour," from which we make the following translation: "Flour is strongly inclined to absorb the odor and taste of other substances with which it is allowed to come in contact, for any considerable length of time. Whole consignments of flour have been spoiled during long journeys in cars or boats, which contained besides it guano or dried or smoked fish. Ammonia combinations especially injure the smell and taste of flour at quite a distance, and a job lot of flour is known to have taken a tar smell and taste on account of its having been stored close under a tarred roof. Great care should be taken in selecting the means of disinfection of shipping contrivances. Chloride of lime ought never to be in a car carrying flour, nor ought the smell of this disinfectant ever to be allowed near flour or wheat, as it will impart without fail the taste and smell of garlic."

We would add that the danger of absorption of the odors and tastes of other substances is not nearly so great when the flour is packed well in barrels as has been customary in this country. We have been creditably informed that our flour sent across the ocean gains in weight considerably when packed in sacks as ordered by European buyers. This shows that our flour is ground to last. We grind it dry, and the water the flour absorbs on board ship surely does not add to the life of it. When we receive friends direct from the "old country," or pass by immigrant houses, we notice the peculiar sea-ship smell which remains for weeks in their garments, trunks, etc. This smell, if it can be proved to be absorbed, certainly cannot improve the quality of our flour. At any rate we think it decidedly advisable to ship the choice brands of American flour across the ocean in barrels instead of sacks.

The *Allgemeine Mueller Zeitung*, of Berlin (No. 16), contains an interesting communication of a Paris correspondent of the *Pester-Lloyd* which reads as follows: American flour in France is something new as yet, and the quantity in the market is so small and of so little importance, that it is hardly worth while to speak of it, although we may be justified in expressing the opinion after noting the increase of importation of American flour in Germany and England, that the French importation may be expected to increase soon. It is scarcely more than two years since the first modest attempts were made to import American mill-stuffs into France, especially Paris. The introduction was not an easy one for a flour was imported which was too good and too high in price to be used in place of French bread-flour, and not white and good enough to serve in place of Hungarian

flour. Moreover, the flour was packed in barrels which were very much in the way in the closely-built French metropolis, and the flour could not be obtained in even quantities. Today the conditions are so much changed that it behooves the Hungarian milling industry to take notice of it. The use of Hungarian bread-flour in France is insignificant indeed, but a considerable quantity of finer flours, principally No. 0, is purchased here of Budapest. The mills at that place have well realized that the French market for their best numbers was liberal, but their bread-flours were hard to dispose of. It is true that as yet the American milling industry is considerably behind the Hungarian in qualitative respect, but we dare not deny that as the Americans are improving energetically that a competition will ensue that will be hard to be overcome by our Hungarians. American millers were glad to dispense with barrels for packing their flour in, for which they have now substituted the considerably cheaper sacks. At first we were supplied by London, where considerable quantities are kept on hand, but we had to abandon this way owing to extra expense and the fact that the French Government demands a higher duty on flour that is not shipped directly from the country in which it is ground. Now, we receive cargoes directly from St. Louis or New York, unloading them at Havre. The duration of the sea-journey is less than three weeks, and the steamers run often and regularly. The enormous freight which the Hungarian productions have to pay for transportation to other countries is a well-known calamity, and very much felt on bulky articles like flour. The freight and insurance on 2,000 pounds of flour shipped from New York to Paris is about 50 francs (\$10), and on the same quantity from Budapest, using the Danube river as much as possible is 81½ francs (\$16.06).

Amongst the numerous American flours we can find a great deal of very nice flour, which is just as good as Budapest No. 3, and lately a flour has been put on the market in this city, which is ground coarse and sharp and which in color and baking propensities clearly can rank with Pest sharp No. 1. Very fortunately—I say this as a native Hungarian—the French are slow to favor American flours as it is yet more difficult to handle them, but this difficulty will be overcome in time, and it is a fact that flours continually imported on trial, whether cheap or dear, will find buyers, and are used in place of Hungarian flour. The Americans are well known for their great energy and perseverance, and no one need wonder that they should give us some "hard nuts to crack" in the course of a few years. Even if they should not further improve their mills, we should find them a strong competitor, for their best product will always be called for instead of our No. 2, as it costs about 5 francs (\$1.00) per 200 pounds less than the same quality of Budapest flour."

Verily, readers, here is a sky-rocket indeed! But won't this Parisian-Hungarian catch it for his open-heartedness! We would remind you of the assertions made time and again in the Austro-Hungarian milling papers to the following effect: "Never mind; the best American flour is not better than our numbers 4 and 5; American flour does not rise well; it is all starch and contains hardly any gluten. The Americans are ground-robbers; they sow wheat for 30 consecutive years on the same ground; the American flour trade will be spoiled without fail," etc., etc. Now we read that our flour is equal to No. 2 Budapest—yes, even that a sharp American flour was introduced at Paris ranking with No. 0 Budapest! More of that kind will be made and sold—just wait until we have made more improvements in American mills and we shall see what we can do. As to the charge made of deficiency in gluten in American flour, the most successful imported Hungarian millers in this country, Messrs. Henler, Wohlgenannt and Wohlrab, were delighted with the richness of our spring wheat in that respect. The former gentleman told us that he frequently washed out 38 per cent. of gluten! As to robbing the ground by our system of wheat cultivation, we would simply say that they do not know what they are talking about. This country is a great one and every one wants to make money rapidly and we are content to leave to the coming generation the improvement of the lands used to enrich the present. We see this already illustrated; Ohio, Tennessee and Kentucky wheat was once very rich. When it depreciated in quality, Illinois and Indiana wheat was sought for; after that Wisconsin, and now Minnesota and Dakota wheat brings the highest price. In the meanwhile, Ohio and especially Tennessee wheat begins

to be noticed once more. The lands have had a chance to repose and recuperate their power. They have been well cared for during the past 30 years, and soon we will see the extremely large Tennessee wheat—a Mediterranean seedling, a very glutinous winter wheat, in the market in large quantities unless it be absorbed by the 800-barrel roller-mill now being built at Nashville, Tennessee, (Lanier & Co.'s) and similar mills, by which in time Tennesseeans may be able to grind most of the wheat raised in their State.

The Cincinnati Steam Engine Test.

A COMMUNICATION FROM EDWIN REYNOLDS, M. E.,
IN ANSWER TO JEROME WHEELLOCK.
(SEE PAGE 22.)

R. Grimshaw, Esq., Franklin Institute, Philadelphia, Pa.

DEAR SIR—I am in receipt of a printed communication from Mr. Wheelock to Hon. G. E. Gault, relating to engine tests at Cincinnati. As I am informed the decision of the matter in controversy has been placed in your hands, I address this communication to you.

Mr. Wheelock, after having printed one circular devoted principally to abuse of the expert, prints a second circular accusing me of going "behind the facts" and of criticising the expert, yet in this same circular he utterly ignores one-half of the economy test, and the regulation test entirely, taking his best record and my worst for comparison, and yet accuses me of reaching erroneous conclusions because I give the average results of the whole regulator and both economy tests, by which alone the truth can be reached. Now suppose I take his method, and as he has taken the condensing test with a uniform load to prove that his engine is superior to mine in regulation, I will take the non-condensing test in the same way, and let us see what will be found by his method of ascertaining results:

	Wheelock.	Reynolds.
Average revolutions per minute	76.072	75.33
Maximum	78.19	75.40
Minimum	73.14	75.26
Difference between average and maximum	2.18	.07
Difference between average and minimum	2.92	.07
Average variation from average speed	2.519	.07

Or 35.98 times greater variation than the Reynolds. But to be perfectly fair with his engine, if he wishes to substitute the economy test in place of the regulation tests to determine the regulating qualities of the engine, I will give him the benefit of the average of both, but cannot submit to his being allowed to select his best and my worst, and ignore all the rest as he does in his last circular, to determine this point:

	Wheelock.	Reynolds.
Condensing test average variation from average speed	.430	.535
Non-condensing test	2.519	.07
Average variation from average speed for both trials	1.474	.302

Or 4.87 times greater variation than the Reynolds. And now I will include the regulator test, to give him his true position as to regulation in all the tests. And I will use his method of comparison, so he can find no fault with the results:

	Wheelock.	Reynolds.
Regulation test average revolution per minute	76.396	75.463
Maximum	81.	76.
Minimum	73.	75.
Difference between average and maximum	4.634	.537
Difference between average and minimum	3.366	1.463
Average variation from average speed	4.	1.

Now I will give him the benefit of his own system of comparison on all the tests:

	Wheelock.	Reynolds.
Average variation from average speed condensing test	.430	.535
Non-condensing test	2.519	.07
Regulation test	4.	1.
All tests	2.316	.535

Or 4.329 times greater average variation from average speed than the Reynolds, taking all the tests with uniform and irregular load, and using his own system of comparison.

In making the above comparison, however, I do not wish to be understood as endorsing Mr. Wheelock's system, as I believe him to be the original inventor and entitled to the exclusive use of a system which takes but two periods of 15 minutes each out of a total record of 20½ hours to prove the superior regulation of his engine. But perhaps he ought to be excused for this, as in no other way can he make it appear. Now let us take the complete condensing record from which he reaches his remarkable conclusion and see what it will show:

	Wheelock.	Reynolds.
Average speed as shown by the report	74.472	75.383
Average variation above average speed	.351	.091
Average variation below average speed	.104	.117
Average variation from average speed	.267	.104

And if we take the non-condensing test in the same way, we find:

	Wheelock.	Reynolds.
Average speed by report	76.072	75.33
Average variation above average speed	.437	.07
Average variation below average speed	.443	.07
Average variation from average speed	.44	.07

And using the same method of comparison, the special regulator test with varying load, made to determine the relative regulation of the several engines when subjected to sudden and great changes of load, the record shows the result to have been as follows:

	Wheelock.	Reynolds.
Average speed	76.396	75.463
Average variation above average speed	1.48	.628
Average variation below average speed	1.0131	.568
Average variation from average speed	1.306	.598

The total record with this system shows as follows:

	Wheelock.	Reynolds.
Condensing Test		
Average variation from average speed	.257	.104
Non-condensing test	.44	.07
Regulation test	1.306	.598
Average variation from average speed for all tests	.668	.257

The extreme variations in each test were as follows:

	Wheelock.	Reynolds.
Condensing test	1.27	1.07
Non-condensing test	5.05	.14
Regulation test	8.00	2.00
Average of extreme variations in all tests	4.776	1.07

And on such a regulation record, with economy of coal of 2.2095 to Reynolds's 2.171, must his claim to the award rest.

As to the matter of friction of jack shaft, I gave the actual figures of the report, and did not go behind the facts as he does, and then snuff the whole friction test out of existence by saying: "A mere boy could turn it by hand from the start." When the expert's figures, whom he accuses me of charging with not being able to investigate and judge of so simple a matter as the friction of an engine, show the average friction of shaft for all three tests to have been 7.7638 horse power, I made no such charge directly or indirectly, yet he in his usual fairness scouts the idea of the same expert's test of friction of shaft as being of any value.

It might be fairly presumed the Wheelock with a wheel weighing but 12,000 lbs. should run somewhat lighter than the Reynolds which had a wheel weighing 14,694 lbs. The effects of his light wheel are clearly shown in the unsteady action of his engine in all tests, and in the one he selects.

I would like to ask Mr. Wheelock how he is so sure the friction test of the engine is all right, and the same test of shafting all wrong; and if I am to judge of his mode of reasoning in other matters connected with the test, it is because one is in his favor and the other against him. Even the reduction of pressure from initial to point of cut-off, which the indicator shows in his engine so clearly, he calls "doubtful," and tries to help himself on the reduction from the pressure in pipe to initial by saying: "By the contractions at the junction of our steam pipe with the main line practically reducing ours to the same size as the Reynolds." As a matter of fact no such contraction as he represents existed, and even if it did the steam to the Reynolds had two right angles to pass before reaching the gauge, and his but one, which would more than compensate for the difference in the length of pipe.

As to the Bulkley condenser, he claims to have been unjustly charged with the rising of the water, when he knows he could not have run the condenser without developing that amount of power in some way, either by a steam pump, as I still maintain is the usual practice with that condenser, or by his engine, which would have been the least he could have done; and on the cost of this power, based on the economy of the engines, the charges are made.

And to still further show his eminently fair method of treating this matter, insists, "it would have been quite as just to charge Mr. Reynolds with the requisite steam to drive his steam air pump in the patented arrangement employed by him generally."

When, as a matter of fact, the air-pump was driven by the engine, and I never use the steam air-pump where the question of economy is the ruling one, but where two or more engines work into the same condenser, or where parties may prefer it for some convenience of location or other cause. I am glad to find one point in which he can endorse the expert, viz.: "the eminently cautious and honorable grouping of the various merits of the engines."

The facts concerning the grouping which gives him the 7 points out of 12, are that he gets 4 out of the 7 by the meter record which the expert admits and the record itself shows is not reliable; and this is not the most objectionable feature. The expert evidently places but little value on the amount of condensing water even if the record were correct, as he says: "Condensing engines are usually employed where an ample supply of water for condensation purposes may be had without

(Continued on page 23.)

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DEALERS in milling supplies of all kinds should advertise in the UNITED STATES MILLER.

A cablegram was recently sent from London to New York and an answer thereto received in less than one hour.

THE new Fontaine locomotive with two passenger cars attached recently run over a Canadian road 229 miles in 235 minutes.

THE excess of exports over imports for the year ending March 31st, was nearly a quarter of a billion dollars which was better than the preceding year by \$49,000,000.

THE snow no longer blockades the Western railroads, but much inconvenience and delay of freight business has been caused by strikes of employees during the month just passed.

THE New York Legislature have passed a bill exempting American ships doing business with foreign ports from taxation for fifteen years. The New Canal tolls will undoubtedly be reduced or abolished altogether.

THE prospects for a great grain crop seem to be improving as the season advances, and there are not a few who believe that the wheat crop of the United States this year will reach nearly a half billion of bushels.

AN ELECTRIC RAILROAD.—A cable dispatch to *Herald*, dated Berlin, May 12th, states that the electric railroad to Lichterfeld, Prussia, was opened to-day. It was a perfect success. A number of prominent scientists and officials were present.

THE city Council of Chicago have passed an ordinance requiring all telegraph and telephone lines in the city to be laid under ground within two years. This is as it should be and other cities of considerable size should make haste to do likewise.

It has been estimated by those interested in learning that the aggregate water power in South Carolina represents 3,000,000 horse power, which is equal to about three-fourths of all the steam engines, stationary and locomotive in the United States. At least 1,

000,000 horse power is drawn from rivers draining the water sheds of North Carolina.

A TEXAS correspondent writes to the UNITED STATES MILLER as follows: "The recent rains have greatly improved the appearance of the wheat and oat crop. While the acreage is not large the yield promises to be good. Harvesting will commence in the early part of June. The acreage in corn and cotton is larger than in any previous year. The prospects for good crops could not be better."

A GERMAN correspondent of the *Engineering and Mining Journal* (N. Y.) says, in regard to the Strong system of manufacturing fuel-gas: "I can make, with a furnace now in daily use, with a ground area of 4' 6" x 7' 6" using coke for fuel and heavy residuals (or refuse) from petroleum distillation, 100,000 cubic feet of 30 candle gas per day. This surface has two chambers of only 24 inches square. I think no such results from such limits have ever before been accomplished anywhere. Several new and important applications of the Strong gas system are in progress."

THE TELEPHONE.—Alexander Graham Bell invented the telephone January 15, 1876. The United Telephone Company has a capital of \$17,950,000 paid up stock, the dividends on which are so great that the stock is not on the market at all, the fortunate holders being happy to keep possession of it. The telephone is in use in all countries. April 5, 1881, 690 telephones were in use in the United States. It is believed that the time is not far distant when they will be used by the ocean cables for transmission of speech from continent to continent. Telephones have already been successfully worked for a distance of nearly 1000 miles.

California Millers.

The California millers have organized an association known as the California Flour Exporters Association, the object being to devise ways and means for the disposal of surplus flour and to promote the interests of the milling trade in California in particular and the Pacific Coast in general. F. J. Parsons of Oakland is the secretary. The initiation fee was fixed at \$10 and the dues \$20 a year. The following resolution was unanimously adopted:

There shall be appointed by nomination and election by a vote of the association a committee of three, whose duty it shall be to establish a standard of quality for export flour. Any miller of the state wishing to become a member of the association shall make application representing that his mill is capable of making flour equal in quality to the standard established, which application shall be referred to a committee of three appointed by the president, who, after investigation, if they find the applicant's representations true, shall report favorably, and upon securing a two-thirds vote of the association, and signing its constitution, the applicant shall become a member. Applicants for membership are required to pay the expenses of the committee incurred in investigating their representations. Any member of the association who shall export any flour which shall prove below the standard grade of flour adopted by this association shall be required to make an explanation to the satisfaction of two-thirds of the members of the association, and for non-compliance with said requirements shall forfeit his membership, and as regards price shall subject himself to the decision of the Liverpool Corn Exchange, and make good any deficit which said exchange may require.

Messrs. D. M. Thompson & Son of Liverpool were appointed agents for the Association for England.

THE *Age of Steel* (St. Louis) believes there is a strong probability that there will be a very heavy importation of iron from Great Britain, Sweden and Germany. It says: "The causes making such a thing possible are, first, the depression of the trade in foreign countries caused by over production, and, second, the inability of American manufacturers to produce iron at rates sufficiently low to prevent foreign importations. This inability is caused, first, by the excessive price charged by miners for ore, and second, the high prices they have to pay operatives. It is true that an American plant turns out more product than a similar plant in Great Britain, Germany or Sweden, and that the industry is protected by the tariff; but it is also true that the greater cost of raw material and the greater cost of skilled labor about offsets these advantages, and foreign manufacturers finding themselves with immense stocks of iron on hand, their domestic consumption too light to require it all, and necessities pressing them to realize upon their goods, stand ready to rush into this country their surplus as soon as prices here go so low that our mills cannot operate. If the objectionable event should occur, and the warehouses and storage yards in seaboard cities become filled with foreign iron as was the case during the recent depression, it would be a blow to the American iron industry that would be as severely felt by the ore miners and furnace and mill operatives as by the manufacturers themselves."

The Cincinnati Steam Engine Test.

JEROME WHELOCK'S REPLY TO EDWIN REYNOLDS.

To the Hon. Geo. E. Gault, President of the Board of Commissioners, First Millers' International Exhibition, Cincinnati, Ohio:

DEAR SIR: My attention has been called to a circular from Edwin Reynolds, claiming to investigate our title to the award of first position in the recent engine tests. Mr. Reynolds starts all his comparisons on the assumption of a mean value between the two economy tests; but when we have shown and proven by the appended affidavit from Mr. J. H. Manning, that, during our absence from the non-condensing trial of the "Wheelock," a large quantity of water had been withdrawn from the engine, although charged to it, rendering the results from this part of the tests unreliable, it cannot be fair to accept the non-condensing trial in comparison of economy, and we are justified in stating that the "Wheelock" was proven the most economical from the following data of the record:

	Reynolds.	Wheelock.
Steam per indic. h. p. per hour, actual.....	20.62	19.47
Steam per indic. h. p. per hour, cor. for steam.....	19.49	19.26

and corroborating the actual water tests by the perfect harmony with the showings of the diagrams, we also quote:

	Reynolds.	Wheelock.
Steam per hour, indic. h. p. by the diagram.....	14.89	13.91

proving, undeniably, the superiority of the "Wheelock" as to economy.

The regulation of the various engines was demonstrated in the economy tests as follows:

	Reynolds.	Harris.	Wheelock.
Average revolutions per min.....	75.383	75.830	74.472
Maximum revolutions per min.....	76.130	77.130	74.930
Minimum revolutions per min.....	75.060	74.800	74.070
Difference bet. av. and maximum.....	.747	1.300	.458
Difference bet. av. and minimum.....	.323	1.030	.402
Av. variation from average speed.....	.535	1.165	.430

showing that the "Wheelock" deviated to the least extent from its average speed, being, therefore, in point of regulation, superior to either of its competitors.

From this test at which we were present, and from other tests on record, we were justified in believing that our engine would show as high results as any in point of regularity of motion, and, if the regulator test did not come up to our expectation, it must have been because, as Mr. Reynolds states, "the Wheelock regulator was adjusted after the economy trial," although such an adjustment was certainly not made in the right direction; neither did we know of this before reading Mr. Reynolds' circular, nor would we have tolerated it had it come to our notice. The unfortunate circumstance of our almost constant absence, from illness, during the regulator and non-condensing trial, makes such an occurrence a possibility.

We here submit that none of the other engines were placed under such disadvantages and delays as the "Wheelock," which, coming in late, was subject to all manner of hindrance from splitting and deranging of steam pipes, giving us no chance whatever of getting our engine in proper trim before we were suddenly and unexpectedly called on to be tried. Not once had our valves been taken out, not once had we tried our condenser, not once had our regulator been adjusted to a load, or to the nicety required for a close regulator test. On the other hand the "Harris" and "Reynolds" had been in operation for weeks, their valves had been removed, examined and adjusted almost daily.

As to the weight given for the "Wheelock," we had hoped that the report would have pointed out the small error as to its amount, for, although we concede that it is by far lighter than either of the other engines, we by no means deduce from this that it is any the weaker in consequence. We put the metal where it will do the most good, not into the cylinder, to make it look like a tool-box with some valves put into it; not to make the unnecessary appendage of a wrist-plate, or other nonessentials weighing hundreds of pounds; or into dash pots and weights of the magnitude of a good sized churn; nor do we go to the trouble to cut our bed-piece in two, to have the pleasure of bolting it together again, with the addition of a good deal of material to strengthen the joint; but where the iron is required, there we put it, and where not needed we leave it off; and here we quote from the report: "But it did not appear, however, during the trials that the reduced weight of the 'Wheelock' engine rendered it less capable of resisting the load strains, than either of its more celebrated competitors."

To try to explain our superiority in the small amount of friction in the engine, by

claiming to show that the difference in friction between the "Reynolds" and "Wheelock" was merely due to a decreased friction of the jackshaft on account of the length of time the shafting had run, seems almost incredible. Can it be possible that Mr. Reynolds believes such stuff, or does he so underrate the common sense of his readers, to make them believe that the jackshaft was consuming 2½ horse power less because it continued from the 18th to the 25th of June, when a mere boy could turn it by hand from the start. If this be true of the shaft, would not the same reasoning hold good with the engine and would it not, at that rate, soon reduce the friction of the engine to a mere nothing? Think of it, 2½ horse power less in seven days! How is it then that the "Reynolds Engine" was not by far superior in light running than the "Wheelock," as is stated, driving the Exposition for weeks before the foundation of the "Wheelock" had even been built. Can Mr. Reynolds honestly say that he is casting no reflection upon the expert, and yet charge him with not being able to investigate and judge of so simple a matter as the friction of an engine, after such complete and exhaustive tests?

The difference between the steam pressure in the pipe and the initial pressure are explained by the increased length of steam pipe through which the steam had to travel to reach the "Wheelock," and by the contractions at the junction of our steam pipe with the main line, practically reducing ours to the same size as the "Reynolds."

The rather doubtful decrease of pressure at point of cut off was caused by the fact that the "Wheelock" had not been sufficiently limbered up in the valve motion to allow the valves to drop with their usual ease, as noted by the expert.

Mr. Reynolds proclaims his valve mechanism as the most perfect from an examination of the cards, while only a year ago he paraded in one of his descriptive pamphlets a letter from Mr. Hill, impairing the value of a judgment based on Indicator cards alone; we coincide with him somewhat in this position, and seek absolute results, and in this respect he should yield to the "Wheelock," as it was unquestionably first in coefficient of useful effect, both condensing and non-condensing, and in this the report fully sustains our position. As far as the statements of the influence of the Bulkley Condenser on the good performance of the "Wheelock" are concerned, we have fully explained in our exceptions before this that we were rather the sufferers than otherwise by the improper apportionings of the Bulkley Condenser.

If Mr. Reynolds sees proper to burden his customers with the purchase of a steam pump and the great expense connected with its use, we have no right to interfere, but we decidedly object to his assertion that a steam pump should necessarily be used with a condenser under all circumstances; we in fact do not use it at all in connection with our condenser, nor should we have used a steam pump at Cincinnati had circumstances called for the use of a pump.

Although we are unjustly charged with the raising of the water in the report, the record sustains our claims to first position, notwithstanding this additional drawback. It would have been quite as just to charge Mr. Reynolds with the requisite steam to drive his "steam air pump" in the patented arrangement employed by him generally.

The meter records during the entire trial showed, on the whole, a great regularity, with the exception of a few moments between 5 and 6 o'clock P. M., of which Mr. Reynolds speaks, as at that time there was undoubtedly a heavy drain from the city main pipes, and it was at this juncture that Mr. Reynolds showed great satisfaction at the condition of affairs, as he deemed it impossible for a Bulkley Condenser to properly work under similar adverse circumstances.

With the unfounded and sweeping assertions in the first part of his circular, it is not to be wondered at that he should finally arrive at such erroneous conclusions; but which of the two courses will commend themselves to your sense of justice:

Mr. Reynolds, guarding himself at the outset so as not to appear finding fault with the expert and his report, and yet at every point going behind the facts, condemning the expert's comparisons in regulation as unjust, supposing him not to be capable of even judging of the friction of a shaft, utterly ignoring the eminently cautious and honorable grouping of the various merits of the engines; or our own course, in which we frankly state

(Continued on page 27.)

(Continued from page 21.)

cost;" and yet this grouping which Mr. Wheelock eulogizes as eminently cautious and honorable," makes a percentage of saving in condensing water which costs nothing, equal in determining the merits of the engine to an equal percentage in regulation which is of vital importance. In other words, the non-essential element of condensing water, with a record admitted to be unreliable, is made to over-balance the essential elements of economy of fuel and regularity of motion.

It will be noticed that the temperature of overflow from the Reynolds condenser was 101.7, and from the Wheelock 111.7, which accounts for a large proportion of the difference in quantity supposing the meter record correct, which it evidently was not.

In my previous communications to the commissioners I made no criticism of the mechanical construction of my engine, and think Mr. Wheelock displayed very poor taste by bringing that matter in question, in a matter where "absolute results" are what he seeks for. His assertion, "nor do we go to the trouble to cut our bed piece in two to have the pleasure of bolting it together again," has about as much truth and point as the majority of his statements concerning the test, the fact being that he does cut them in two, the only difference being that he cuts his at the pillow block and the Reynolds does not, but makes the joint at the slide end, and thereby secures advantages of which he seems to have no conception.

I have no objection to his ridicule of the Reynolds valve gear vacuum pots, which he calls "dash pots and weights" included. That valve gear has made a reputation for itself which can stand all such nonsensical remarks without injury.

I have no doubt he must have been greatly surprised as he says, and I think all can sympathize with him when he says, "we were suddenly and unexpectedly called upon to be tried."

The exposition opened May 31st. The test of the Reynolds engine began June 17th, and of the Harris June 21st, and was finished on the 22d; and as the Wheelock was the only other engine to be tested, and the exposition was to close on the 26th, he surely must have been much surprised at being called upon for trial on the 25th of June, when his first test was made and the exposition closed on the 26th, the record showing that his economy test closed at 9:15 A. M. on the 26th. And the regulation test was made still later on the closing day of the exposition.

He closes his dissertation by saying, "the discussion if desired can be continued indefinitely." No one doubts his ability to continue a discussion such as he has outlined "indefinitely," but unless he shows a greater disposition to confine himself to the report, and abide by its showing as a whole, I hardly think any one will care to occupy their time in following him.

Yours truly, EDWIN REYNOLDS.

Milwaukee, May 28, 1881.

As a part of the history of the Engine Test, I submit the following letter, which explains itself:

(COPY.)

MILWAUKEE, June 25th, 1880.

John W. Hill, Esq., Chief Expert Millers' Exposition, Cincinnati, O.:

DEAR SIR—I am informed by Mr. Tucker that a leak was discovered in the safety-valve of the test boilers after the close of my trial and previous to the commencing of Mr. Harris'. This must have existed during the test of my engine, and therefore makes another test necessary for a reliable comparison of the two machines, and I trust to your sense of justice to make such test.

I understand the valve had to be ground in on its seat to make it tight, and if such is the case it could not have been tight during my test.

(Here follows some reference to a heater on exhibition which has no bearing upon the boilers.)

I ask no favors, but simply justice at your hands in both matters referred to, and trust to you to see that both engine and heater shall not be placed at a disadvantage by circumstances over which I had no control.

I would immediately come to Cincinnati to attend to the matter in person did my health permit, but such a trip is out of the question at present. Awaiting your reply, I am, yours truly, EDWIN REYNOLDS.

"WHAT do the Democrats want of Mahone?" asks a morning journal. Just what the darkey wanted of the 'possum. "Nice fat 'possum; make drefful good stew," said the darkey, just as he was going to put his hand upon him. But the 'possum escaped. Then the colored brother shook his empty fist at him, and cried out: "You ole 'possum! you're not so berry fat arter all."—New York Mail.

MOLMOPHILOS.

Discusses the Interesting Subject of
Rollers and Millstones.

Which the Readers of the "United States Miller" Will Find Interesting
Reading at this Time.

READ—AND REFLECT.

[Written for the UNITED STATES MILLER.]

The word, sharpness, expresses a finished state—it is a word of creditable meaning. We say of a man—"he is sharp," meaning shrewd or smart, but if this quality of "sharpness" leads him to ignominious transaction we call him "a sharper." Punctuality needs the adjective as—"9 o'clock sharp"—carelessness, however, has no use for it. Wounds made by sharp weapons heal quicker than those made by dull ones, and tools of any kind when sharp will enable the mechanic to work faster and produce a better result than dull ones; and indeed, in most cases dull tools do not produce the desired result at all. A millstone when sharp, will do better work than when it is dull, and a sharp corrugated roll, will ensure a better result than a dull one.

Let us for a moment take the venerable millstone into consideration. They have ground the cereals of our ancestors and we have frequently seen the pictures of the millstones used thousands of years ago. They were indeed of a primitive design, but up to date we can say no more or less of them than that they are measurably improved, yet primitive means of grinding. One idle mass of stone is covered by another one moving rapidly. The destruction of the material entering between them is effected by the roughened surface of the stones. I say, destruction, intentionally, for the shape, of that which enters is destroyed and often its quality.

The speed of points of the grinding surface of the moving stone—the runner—is proportionate to their respective distances from the center. Suppose the grinding is done on the 9 inches next to the circumference of the stone, then a point on the inner limit of the grinding surface would move 1018 feet per minute in a 48 inch stone running 130 revolutions per minute. A point on the outer circumference will run 1636 feet, or more than 600 feet per minute faster. The conditions of grinding, therefore, can not be uniform at all points of the stone. Most of the ground mass will not be thrown out through the main furrows but it has to work through the nine inches of surface or a part thereof. Thus at first unnecessary heat is generated and natural science has shown us that heat spent, means work spent. Secondly, the runner has to revolve with great velocity in order to throw the grindings out readily. This intention is a good one, but there will be but little ground and thrown out without being dragged over a score of lands, dreadfully close. Third, a great deal of flour is atomized during its effort to leave the stones as the grinding surface has to be a very large one (in comparison with rolls) in order to secure good work and as few imperfectly ground returns as possible.

We know that a pair of stones of a certain dress (draft) will work best at a certain speed. If the runner revolved slower—the stones would not free easily, and if it runs exorbitantly fast, the feed will be thrown out unground. Now, if the draft of the furrows were constructed for very slow speed of stones, the power spent would of course be reduced—but the runner would not have its necessary steadiness; it would be apt to "flutter." You see, that stones are doomed to revolve fast, whether they do little or much work; they are power consumers "par excellence." This age is a saving one; we are improving our boilers so as to evaporate as much water as possible per pound of coal; we are using the Corliss Compound Condensing Engines, the "ne plus ultra" of steam savers, to run our factories by, using 1½ pounds of coal per horse-power per hour, and our engineers are equipped with indicators, by means of which they can tell the power, a certain mechanical contrivance, newly added, consumes. We want to buy none but the easiest, cheapest running machines, and our mill-owners are just as proud of the percentage of saving in the coal-pile as the headmillers are about their percentage of grinding results.

A roller mill is a much lighter grinding contrivance than a pair of stones. A point of grinding surface only needs to travel at the utmost 700 feet per minute. The differential motion in a pair of stones per second is, as

one surface is idle equal to 22 feet, while the differential speed of the grinding surfaces of rolls does not need to exceed 4 feet per second. The grinding surface of a pair of rolls is small, grinding being done instantaneously, no dragging of meal is involved, and no matter how sharp a millstone is, or how cool it grinds, the roll delivers its product, and very naturally so, a great deal cooler. As to the lasting of the sharpness of the dress, we know that a careful miller has to re-sharpen his stone once every week. The sharpness is rather short lived, indeed, and the stones do not work well for 6 days and begin to grind so badly at once, as to compel the miller to take them up for redressing.

The stone is an *unsteady* worker; it does not work 24 hours alike and every hour it gets worse than in the previous one until it has to be re-sharpened, when the same story begins anew. A roller works *evenly* for from two to three years if cared for well.

The duller the stone becomes, the warmer the meal, and the whiter the flour, until the temperature is increased so much as to burn the gluten, discoloring the flour, of course. Why is it that the flour of a newly sharpened stone is not so white as of the same stone when having worked 4 or 5 days? The reason is exactly the same as why a dull corrugated roll will make a whiter flour than a sharp one, only this calamity happens once a week with stones and every two to three years when using rolls. The readers will think I do not like white flour. But let me proceed,—I do like white flour, but it must be strong and keep its color after being wetted. I do want white flour, but it must be coarse and sharp!

When the cutting action of the stones or rolls is impaired to some extent, a squeezing action takes place. By this action the flour is, permit me the expression, not *cut* into suitable size, but *rubbed* into powder.

If a kernel of wheat is forcibly squeezed flat, the shape of its flour magazine, being composed of groups of flour particles, is changed. During this action each particle, rubbing the adjacent ones, grinds off from itself; and this makes flour dust, fine enough to drop readily through cloth, much finer than No. 16. The finer the flour is, the whiter, we know; but the finer it is, the less water it will absorb and retain, and the sooner the bread made of it will get dry. The white color of such flour dust is simply delusive, for it has no *life*, as the bakers say. Put a heap of it on the table and you will not notice the rich hue, the transparency of the "contours," so much liked in live flour. When middlings are ground to flour on smooth chilled iron rolls—and the rolls are the least overtaxed, a great deal of this flour dust is produced. Now, if you want rich flour on stones, you have to keep your stones sharpened and use as little "land" and grinding surface as possible. If you want rich flour in your wheat reductions, you have to keep your rolls well sharpened, as the bakers have no love for that extremely white dust flour; they call for coarse, sharp flour, as it will show whiter in the dough than that white powder, which is too lazy to rise. And, if you want rich, sharp and white flour of middlings, ground on smooth, chilled iron rolls, have them replaced by naturally sharp—porcelains! If middlings are conveyed—this flour dust will be produced, and middlings especially before going to the purifiers ought not to be conveyed, but re-elevated if they have to go far to reach the purifiers. I also admit that even the most careful treatment of middlings on rolls, as for instance the gentle squeezing of coarse middlings on "sizing" rolls, can not prevent the production of flour dust, and I think even for sizing rolls porcelain would answer best, if run at small differential speed, as they will cut enough to insure a granulated flour and not cut enough to grind the chit.

Edw. P. Allis & Co., of Milwaukee, are now getting up an ingenious little tool for the millers to help them out of their troubles with dull rolls; a combination self-acting grinding and corrugating machine. Now the Golden Age of the millers begins. They can, on the sly, grind out their old corrugations and put in other ones of any pitch and any form, and keep the best working shape secret, for the other secrets have—lamentably so—already all leaked out and are at large. But when they change their corrugations, I wish them to be sharp enough to replace their old ones by still sharper ones than the "saw tooth" creases, if they want to crow over their improvements. If the corrugated rolls are well taken care of, as I said above, they will remain sharp for two to three years, but often they are maltreated by sandy wheat, nails, wires, etc., being allowed to get in between them with the feed, and many

millers make no careful use of the checking arrangement every corrugated roll of good design is rigged with. The iron particles in the wheat are easily removed by magnets, amongst which the Howe, Babcock & Co. Magnetic Separator, a self-cleaning magnet, is the most reliable. Stone separating machines (for extracting stones from grain) of any capacity are not invented yet. Mons. Hignette, of Paris, France, has patented a machine for that purpose, which works on the European plan, slow—but sure.

In our American mills of any noteworthy capacity one whole story would have to be filled with his machines in order to do the stone separating in a reliable manner; so we shall have to endure the stone calamity with patience, until some smart mechanical doctor can cure us of it.

New Publications.

LEFFEL'S CONSTRUCTION OF MILL DAMS, published by James Leffel & Co., Springfield, O. Price 50 cents for new edition of April 1881.

The above work is one of a high order, and considering its quality is a marvel of cheapness. Its title indicates its contents. It is profusely illustrated and deserves a place in every millers working library.

We have received a copy of a handsome paper, called *The Housekeeper*. It is published monthly, by the Housekeepers Publishing Co., Minneapolis, Minn., price 75 cents per year. It is said to have a circulation of 30,000 copies.

THE MILWAUKEE MAGAZINE, published by the Milwaukee Magazine Co., No. 427 Milwaukee street, Milwaukee, Wis. Price \$1.00 per year.

The publication of this Magazine has been again resumed, and, judging from its June number, it bids fair to regain the very creditable reputation it had before its publication was unfortunately suspended. Milwaukee alone is able to furnish sufficient encouragement to support a handsome monthly magazine.

Things Worth Knowing.

A VALUABLE GLUE.—Householders and others will be glad to hear of a very permanent glue—a chrome glue—which is made by an admixture of common glue of one part of acid chromate of lime in solution to five parts of gelatine. The glue made in this manner, after exposure, is insoluble in water, and can be used for mending glass objects likely to be exposed to hot water. It can also be made available for waterproofing articles, such as sails or awnings, but for flexible fabrics it is not suitable. A few immersions will be found sufficient to render the article impervious to wet. It is necessary that fractured objects should be exposed to the light after being mended, and then warm water will have no effect on them, the chromate of lime being better than the more generally used bichromate of potash.

SOLDER.—The fusibility of soft solders is increased by adding bismuth to the composition. An alloy of lead 4 parts, tin 4 parts, and bismuth 1 part is easily melted; but this alloy may itself be soldered with an alloy of lead 2 parts, bismuth 2 parts, and tin 1 part. By adding mercury a still more fusible solder can be made. Equal parts of lead, bismuth, and mercury, with 2 parts of tin, will make a composition that melts at 122 Fahr.; or an alloy of tin 5 parts, lead 3 parts, and bismuth 3 parts will melt in boiling water. In mixing these solders melt the least fusible metal first in an iron ladle, then add the others in accordance with their infusibility. To cast strips of solder, pour the molten metal on a flat surface of stone or metal, drawing the ladle along the while to leave a thread of metal of the desired substance.

Funnygrafs.

"I WOULD announce to the congregation that, probably by mistake, there was left at the meeting-house this morning a small cotton umbrella, much damaged by time and wear, and of an exceedingly pale blue color; in the place whereof was taken a very large black silk umbrella of great beauty. Blunders of this sort, my brethren, are getting a little too common."

A CASE of chronic laziness is reported from Washington. A young man appointed to a Department clerkship was conducted to his desk and informed what his duties were. The chief of the department discovered him a short time after comfortably reposing in his seat, with his feet characteristically resting on his desk. "Hello," said the chief: "don't you expect to do any work?" "Work be hanged!" exclaimed the astonished youth; "I had to work hard enough to get here."

London International Exhibition of Flour Mill Machinery.

At 10 a. m., May 10th, 1881, the Millers' International Exhibition of Flour Mill Machinery at the Agricultural Hall, London, was opened to the public without the least show of ceremony. No speeches, were made, no bands of music filled the air with delightful strains of music, no great man, or little girl dressed in white muslin and tricked with ribbons, turned on the steam to start the engines and machinery in motion while the band played that soul stirring tune, "Pop goes the weasel," but at the appointed hour the trusty keepers of the turnstiles opened the doors and settled down at once to the regular business of taking in the shillings. Truly this was an Un-American way of doing such things, and if the Exhibition had not opened until after dinner, we might have had the opportunity of chronicling pages of British eloquence. *The Miller*, (London) speaks of the Exhibition of machinery useful to the trade as so far being unrivalled, but we must wait until we hear further returns before we will admit that this British Exhibition was a greater one than ours at Cincinnati.

At the opening, the majority of the Exhibitors were in readiness to receive visitors, but some found it impossible to accomplish the great amount of work required in the short space of time allotted to them; but on the second day everything might be said to be completed. The intention before the opening was that the Exhibition should not last more than five days, but the management announced before the end of the first day that the duration of the Exhibition would be extended three days, so that the Exhibition did not close until May 10th. Among the American machines which formed a center of attraction was the Electric Middlings Purifier, which was on exhibition at the stand of J. W. Throop, who also represents many other American flour mill machines. Millers and scientists by the score gathered around this wonderful machine, which seems bound to play an important part in flour mills in the future, and were filled with surprise and admiration at the skillfulness and accuracy with which it did its work. So absorbed did some become in studying this machine that it was with difficulty that they were urged on to give place to the crowds behind them. Many predict that electricity will in one way and another play a very important part in various manufacturing industries in the future.

Amongst the milling systems that were represented on an extensive scale were those of M. J. Harrison Carter and Wm. R. Dill & Son, working on Calcutta and red winter wheat. Mr. H. Simon represented the Daverio Combined gradual reduction system and worked on California wheat. Messrs. Sanderson and Gillespie, operated the Nagel and Kaemp system. Mr. Gardner's system also was in operation and was favorably commented upon. Amongst the other machines in operation we will mention the following: Two Cabane's middlings purifiers, by Byron Corcoran, of London; two tripartite middlings purifiers and two roller mills by Messrs. Fiechter & Sons, of Liverpool, Eng., and Minneapolis, U. S. A.; Seck Bros' roller mills and Sutcliffe's purifiers and centrifugal reels, by Theo. M. Clarke, of Liverpool; three sets of Wegmann's porcelain roller mills, two Millot's middlings purifiers, two Rowan's centrifugal reels, by Messrs. A. B. Childs & Sons, London; two Excelsior middlings purifiers, (Huntley, Holcomb and Heines, of Silver Creek, N. Y.) by Frederick Nell of London; two roller mills by Charles Hopkinson; one roller mill on middlings, one purifier and one centrifugal by Joseph Barron; one disintegrator, by Mr. Greenhill, of Belfast, Ireland. (We wonder if this machine has had anything to do with the disintegration of society in Ireland, that we have heard so much about in the past few months.) Messrs. Howes, Babcock and Ewell of Silver Creek, N. Y., and London, had in operation a full line of their grain cleaning machinery, flour packer and magnetic separator. Their machinery is about as well known in Great Britain as in the United States. Messrs. Hind and Lund operated machinery for purifying and softening middlings. J. W. Throop occupied 1872 square feet of space, and the Gray Roller Mills and Gray Aspirator formed one of the leading attractions of not only his exhibit but of the whole show.

At 2 p. m. on the first day, Mr. Rafferty, managing director of Agricultural Hall, invited the Exhibition Committee and the representatives of the milling press, i. e., Dunham, of the *Miller*, and Tepper, of the *Corn Trade Journal and Millers' Gazette*, to

what we would call a sort of free lunch entertainment. (Parenthetically we would say that the above-named Press representatives, bearing in mind their absent brethren from this side of the Atlantic, undoubtedly did full justice to the entertainment.) The guests drank Mr. Rafferty's health, Mr. Rafferty drank to the health of his guests, and all drank to the success of the Exhibition, and the thing really began to live, and looked twice as big after the lunch as it did before. If they had only had our George Bain there at that time the Millers' Exhibition in less than 24 hours would have caused more enthusiasm than a circus, a Royal birthday and an American Fourth of July all boiled down into one. That is our opinion of George Bain. He is none of your dignified officers who act as if they owned the whole show and had swallowed a cast-iron poker warranted not to bend or break, but he knows how to break the ice in an assembly of comparative strangers and make them feel as if they had known each other for ever so long, and had been acquainted with him long enough to be able to borrow money of him on the slightest provocation. Just give George Bain a button hole bouquet and a hall and he can organize a convention at any time and make a success of it. But this is digressing from our subject. Geo. Bain was not there and he missed lots of fun, and so did our worthy British cousins. On the second day of the Exhibition His Royal Highness Prince Leopold paid the Exhibition a visit and was shown through it by Mr. Hadley, President, and Mr. Chatterton, Secretary, of the British Millers' Association, and other gentlemen, and listened attentively to the explanations of the machinery, and is said not to have showed the least sign of being "bored," which was certainly very creditable and considerate for a Prince. The Prince was said to have been exceedingly interested in the sketch representing a magnified kernel of wheat cut into lengthwise, which Mr. Dunham, of *The Miller*, had on exhibition. Well, we do not wonder at it. Every man who has visited our office and seen the cut in *The Miller* representing it has exclaimed, "Why, what is that? It looks like—well, by Jove, it does though!" A physician was sent to our office not long ago by one of our milling wags, who informed him that the editor had recently received a new medical work from London, replete with profound learning and profuse illustrations. He came, he saw,—went away,—kept his temper—and sent another doctor, and then he was happy. The second doctor got mad and isn't happy yet. In the afternoon of the second day of the Exhibition the regular annual meeting of the National Association of British and Irish Millers' Association was held at the London Tavern, Mark Lane. President Hadley called the meeting to order, and announced that it was purely a business meeting. He congratulated the members upon the increase of interest in the matters of the Association, and referred to the Exhibition then in progress as proof of the growing interest in milling affairs throughout the kingdom. He believed that a new era in connection with milling was opened, and that a new impetus would be given to every branch of its business. He referred to the encroachments of foreign competition, but he believed that with the intelligence, energy and pluck of Englishmen they would be able to show their ability to maintain their position as millers. He spoke of the importance of knowledge of the latest improvements in milling, and informed the Association that their Association had been successful in saving from 15 to 20 per cent in insurance throughout the Kingdom. The Secretary and Treasurer then read their reports, which were entirely satisfactory. The Association then proceeded to the election of a new Council (of nine members) and President. Mr. Frederick Richardson was elected President, and the members of the Council were re-elected. Mr. Richardson's place in the new Council, which became vacant by reason of his being elected President, was unanimously voted to Mr. Hadley, the retiring President. The regular meeting of the Association then terminated, and the members assembled at the annual dinner in the London Tavern. Among the guests were Jos. J. Vanden Wynngaert, President of the German Millers' Association, Sir John Bennett, and 120 others. An excellent dinner was served, after which the usual toasts were drunk and appropriate speeches made.

Mr. Hadley gave the toast, "The National Association of British and Irish Millers." In response to this several speeches were made, but we have only room to insert the one by Mr. Robinson, President of the London Association and Treasurer of the National Association:

He said he was sorry he could not say much for the London Association. He wished he could say as much as Mr. Smith had been able to say for the Sheffield and Rotherham Association. They in London were a peculiar body of men. There had been a pretty thick sheet of ice between them for good many years in the local Association, but that had now got somewhat thinner, and he was sure that in a year or two all differences would be soverely melted from the fact that at the next meeting they would change Presidents—that was the only hope he had of the London Association. He must say, however, that he had much more hope of the National Association. He had much stronger belief in the good it would do the milling trade and the manufacturers of flour generally, than he had in the so-called Local Associations. They were of great use in trying to regulate the system of doing business in their localities, but it was the general system of milling they wanted to treat more particularly than differences which had existed among themselves. He sometimes thought they had been too much frightened by the bugbear of American importation into England. He was half an American himself, and many years ago he was an American citizen and went to the ballot-box with the same right as other citizens. That was the reason he supposed he was such an extremely modest man. This American importation of flour had been a great bugbear to English millers for many years. Looking over the statistics of importations, during a series of twenty years, he found that the percentage of importation between wheat and flour had vastly decreased instead of increased. He could not give the exact statistics; but in 1859, if memory served him right, something like 65 per cent of the amount of breadstuffs imported from the United States came in the form of flour, whereas in 1879 it was 18 per cent. Therefore they need not be so much afraid, especially after the grand exhibition they had now inaugurated, of the importations from America. Their American brethren talked large; he sometimes thought what he called "bunkum" was necessary to their existence. But it must be remembered that they had an enormous country, and it was certain they could not develop their country without great ideas as to their self-assurance. But they must not be frightened at this. Englishmen could manufacture flour as cheap as the Americans. In a few years they would have equaled the Americans and Germans, and they would be able to turn out as cheap and good a sack of flour as anyone else. Therefore it was that they should do all they could to advance the interests of both National and Local Associations.

Sir John Bennett (Cheapside, London), in the absence of Mr. C. Dawson, M. P., proposed the toast of "Trade and Commerce." He said they would easily believe that that was not the first time that, as a city man, he had spoken in city assemblies, but it was the first time that he had spoken in a country assembly, and it was certainly a new experience. He was delighted with the affair, and he begged to tender his most hearty thanks to their most noble president for having been so good as to remember and invite him to see the great Exhibition in the Agricultural Hall. He had had a finger in every exhibition, every pie, pretty well since 1851. He began by being Secretary in 1862, President in Dublin, two or three times in Paris, and elsewhere—Amsterdam, next door to his friend, Herr J. J. Van den Wyngaert, so that he might fairly say that he had seen something of past exhibitions, international exhibitions. But looking at their Exhibition now, so big in its character, he did not know that he had seen one which showed more intelligence, more energy, more science, and which was more pregnant with future great results—international results—than the Milling Machinery Exhibition being held in the Agricultural Hall. He thought it fairly bore upon the toast of "Trade and Commerce," which the Chairman had kindly put into his hands. If there was a spot in this world where trade and commerce might lift up their heads and be proud of their past performances it was in that very spot, the King's Head, Leadenhall street, where they were then assembled. Three hundred years ago, Majesty, Elizabeth, took tea and four and as they were doing on that occasion, she passed a very joyful hour or two there when she escaped from the troubles of the Tower of London, after she had been presiding among citizens, to take her place on the throne of England. Aye, and our commerce from that day to this had been increasing—our honest commerce, trade and manufactures. See with what results! Whatever had been the result of this wealth, up to the first year of this century, such had been the might, majesty, dominion and power of the exertions of the people of Great Britain, that in the next ten years the total amount of the National wealth was doubled. A marvelous performance! Yet it had been doubled again in the succeeding years. They had no want of wealth—boundless, boundless wealth. Men did not know what to do with it. They lent it for nothing—next door to nothing. They could hardly get one and a half per cent for it, even lending it to the Government—of course on good security. Notwithstanding this wealth, the people of England, thirty-five millions of them felt what he felt when he entered that room—that Nature abhorred a vacuum, and when he looked around their Exhibition he said, "These are the right fellows to fill up that vacuum. These are the men who are going to give the world, at least the British world, a cheap loaf." He was not going to ask where the wheat was to be grown. That would settle itself. Taylor, with his clever skull, wit, and wisdom, (and he ought never to hesitate for a moment in future to get on his legs) could tell them which way the cat jumped. Possibly it could not be grown in our little island, but a little island with a mighty soul—a soul for something else than merely growing wheat. He had been a farmer for nearly 20 years, and he was not ashamed to say that he had been a successful farmer. But then he took care to stick to hops. He hopped over wheat, oats at a guinea, and maize at about the same price, for which he had to send, not to his own fields, but across the water if he wanted it. Well, the question to-night was, he supposed, that of the agricultural machinery, a question involving not the growing of wheat, but how they should treat it. Let them, if they could, lay flattering unction to their souls, that they had still advantages over the Yankee. He did not look, as his honorable friend, the Republican on his right (Mr. Tepper) did with the same profound contempt upon the spread eagle over the water. When we remembered their magnitude, when we remembered that they ran from North to South, and through every kind of climate, when we remembered that they had half a dozen States, in which, if they dug a hole, they could drop Great Britain and Ireland, and all its dependencies, and that if they took Texas, and they dug two holes, they could drop it in twice over. We must not shut our eyes to the fact that they had both right seasons and wrong seasons, and perhaps the right in one place and the wrong in another, still let them not funk over that. They wanted to know and to see in their Exhibition how to grind the wheat; they wanted to know also where to get the best machinery. He knew something of machinery, and he had a right to say he was an authority in matters of machinery. By favor of the Chairman he had the pleasure of quietly looking over some of the machinery. On the Chairman's kind invitation, he had been privileged to meet members of the Royal Family. They hob-nobbed and laid their heads together most comfortably and they found great intelligence and attention on the part of everyone present, because they were surprised at the completeness, the ingenuity, the science, the energy, and the wonderful power evidenced in the machinery paraded to the view. He was not joking when he said it was a marvelous exhibition, and that it would contribute to the wealth and power of our National trade and commerce. They could get wheat at the lowest price, and the Exhibition would show them the way to manufacture it at the lowest possible rate. That was common sense. They saw in the Exhibition machinery which was devised for the purpose of producing the best possible loaf at the least possible price. It was a curious fact that during the last 30 or 40 years the human hand had become more and more obsolete as an instrument of industrial production. Nineteen out of twenty of the great operations which were promotive of the happiness of the human family came from mechanical contrivances and not from the human hand. Had there been an opening ceremony, and had the representatives of the Press been present in the usual way, the operation would have been made known, and such speeches as those which they had heard from the Chairman and other gentlemen this evening would have been published abroad. It would have been better for the Exhibition, in

itself so vast and important, had they arranged for some such inaugural ceremonial. In looking over the display of machinery they found that nineteen out of twenty of these instruments were contrivances for which they were indebted to the genius, the gumption and the wonderful tact, ability and the mechanical genius of the Yankee. Yes; they were ourselves, the greater Britain over the water. They were glad to see what the Yankee could do, and he thought they could suck his brains. They could take their lessons and do their work. If it was a question of six shillings a quarter by the roller instead of by the stone, they would decide between the two processes. Still they were not bound to believe everybody who swore in favor of his own child. It was with pleasure he submitted to the toast entrusted to him by the Chairman, and the civic chair would stand forth more distinguished when such a man came to the high position of occupying it. They were all prepared to join in a unanimous chorus of delight and congratulation at the perfect, the absolute, he would say the triumphant success of their Agricultural Exhibition, contributing, as it would, to the National prosperity, the National wealth and National happiness.

Toasts were then drunk to the new President and to the retiring one, to "The Milling Engineers;" and last, but not least, to "THE PRESS." The assembly then dispersed in the best of spirits.

The Clearings System and Its Applications.

We find in the proceedings of the journal published by the London Institute of Bankers a prize essay, consisting of a minute analysis of the clearings system as applied to trade and distribution, by Mr. Arthur Ellis. The writer sets out with the seemingly bold assertion that the clearings system is as important in political economy in respect to exchanges as the division of labor is in respect to production.

The daily exchanges at the New York clearing house exceed \$80,000,000, which are all handled and adjusted by set-off, and even the resulting balances, about 5 per cent, paid in money, are handed over without using ponderable money. In the London clearing house the average clearings are about \$100,000,000; but, says Mr. Ellis, "not a coin is seen in the place." Were this work to be done by paying in gold—as, let it be remembered, must be the case had not the paper substitutes for hard metal, and the still more intangible substitute for paper, the set-off, been invented—"the weight to be moved every day would be 200 tons; if in silver, 3,300 tons. The distances, too, over which portions of the total would have to be moved would vary from a few yards to thousands of miles. Manifestly, without the clearing house, such transfers could not be made."

This statement is worthy of some thought, for it forcibly shows the plan of the clearings system in making commercial changes effective. But it is, probably, not quite correct to say that the 200 tons of gold would have to be moved were it not for the labor saving devices; for, without those, there would be no such volume of business done at all.

The clearings system, however, is by no means confined to banking operations strictly, but is applicable to adjustment of debts in almost every department of exchanges, and is already in more diversified use than is commonly supposed. For one example, the Liverpool cotton brokers use what is called the Cotton Brokers' Bank, devised by Mr. Joseph B. Morgan. It has neither capital nor other characteristics of a bank, but is a clearing house. A shipment, arrival, or quantity of cotton in warehouse, having been bought and sold over and over (sometimes one or two hundred times), the bank "expunges" the intermediate buyers and sellers, and delivers possession from the first seller to the last buyer, all the others being left out in the transaction. A, who first sold, is caused to deliver to Z, who has finally bought. Each intermediary receives or pays his difference, and the transactions, effected by means of tickets and counter-slips, without any records in books, are said to save the employment of \$170,000,000 a year in cash and notes.

A similar system is more or less in operation in stock exchange settlements. The railway clearing house, regulated by act of Parliament in 1850, consists of ninety-three companies, which forward to the central office their accounts and collected tickets monthly. The general post office is itself a clearing house for messages, receiving, sorting, transmitting, and delivering 1,586,937,000 letters and packages yearly within the United Kingdom, besides those sent outside, all at an average cost of less than a half-penny, whereas a special messenger would cost from a shilling to several pounds. The warrant stores of Glasgow form another illustration, a warrant being issued for every ton of pig iron deposited there. These warrants are bought and sold, passing from hand to hand like so many circulating notes. An ironmaker may buy them in advance of his needs, merely to secure himself against a rise of the market price, the iron itself lying motionless in warehouse. There is also practically a clearings system, and the commercial handling of a bulky and unwieldy product is effected without any literal handling. The operations of the united pipe lines in this country, by which petroleum is conveyed literally and commercially, as well as cleared, in part by the issue of certificates, are another illustration. The use of telephones is another, though a little less close.

These illustrations might be more extended, but are sufficient for the purpose. The system of clearings is international, as well as local. Buying a bill of exchange is a simple instance of it, and it is physically possible, requiring only unusual effort for expedition, for a New York merchant to make payments in Calcutta, through the international

clearings system in London, within an hour or two's time, and without leaving his own desk. The ability to do this follows naturally his ability to buy similarly a cargo in Canton and sell it in San Francisco, receiving in return another cargo actually in London. The illustrations may even be extended so far as to consider all trade but a vast clearings system for commodities, as it really is. The tanner, for example, who sells leather to the next intermediary, really sells it for more raw hides, although money may come in as the connecting link in the exchange. And if money were not indispensable as such a link and as a measure of values, we could dispense with it entirely, for whosoever has the warrant has the iron or the petroleum. The title—and bonds, stocks, and all forms of money representatives are but titles—is the thing, to all intent, of possession and property.

The bearing of all this upon the need and growth of currency is so obvious, and we have heretofore presented it so clearly, that we pass it by. That the clearings, or set-off, or symbols, system has its dangers is undeniable. Whoever has the warrant, was remarked above, has the iron. But where is the warrant he has that there is not a warrant issued for which no iron ever was, or that more than one warrant has not been issued for the same ton of metal, or that the metal has not been silently removed? There is no such warrant to be had. The whole must rest on no other basis than confidence. The clearings system also undoubtedly facilitates and even creates speculation, for the use of symbols and representatives will probably do this to the end, so far does it fit in with the gambling disposition. But we must take the bad with the good. The use of substitutes and set-offs is fixed. It can no more be abandoned than steam and electricity can be, and those will serve mankind until—if that is conceivable—swifter servitors are found.

There is, however, one consolatory thought—that the swiftness and facility of this system of effecting exchanges may carry its antidote, in part, to its own poison. The bank clearings notoriously put an end to one form of kite-flying, and made it impossible for a man to keep up a temporary fiction of deposits by drawing back and forth upon two banks at considerable distance apart. The closeness with which the commercial lines are knit and drawn towards centres between places and countries, although making the whole organization sensitive, perhaps tends to bring bubbles sooner to test and to shorten the period of disturbance even while intensifying it. The compensation may thus not be absent.

—Bradstreet's.

Prosperity and the Tariff.

There are a number of prominent journals published in this and other of our leading cities which are in the habit of discussing the industrial and business interests of the United States in a way that would lead one to conclude that their editors imagine they are residents of a foreign country, whose manufacturers covet the markets of the world, and whose policy it is to crush out competitive interests in this country. On general grounds they denounce our protective tariff as the sum of all iniquities. They do not say it in so many words, but they seem to regard the American manufacturer as an interloper, pursuing an avocation which by some right little less than divine belongs to foreign capital and foreign enterprise. To them the American manufacturer is nothing if not mercenary, because he believes in a protective tariff which has been largely instrumental in building up the manufacturing industries of this country.

At present this country is without doubt enjoying a higher degree of prosperity than any other,—it is certainly more prosperous than England, the apostle of free trade. Even the American free trade journals are constrained to admit as much, but some of them qualify the admission with the remark that the country is prosperous "in spite of the tariff." In reply to that sort of dogmatism we quote the following pertinent article from the Boston Advertiser:

"During the last ten years the product of iron and the manufacture of cotton, woolen and silk goods have increased more rapidly with us than with any other country. Notwithstanding the reduction in prices that has taken place meanwhile, the total value of our foreign trade, merchandise only, was \$1,504,000,000 in 1880 as compared with \$930,000,000 in 1870, the aggregate in 1870 having been the largest up to that time. There is no other country that can begin to compare with the United States in the expansion of foreign trade.

"Similar facts might be adduced in regard to scores and hundreds of branches of industry. In fact, with the exception of the ocean carrying trade, it is hardly possible to name a field for enterprise and capital in which the United States has not, during the last ten years, made an immense forward movement, outstripping those countries in whose company it formerly was, and rapidly overtaking breathless rivals who had a long start in the race.

"How queer it is, too, that industry, enterprise and capital, having their origin elsewhere, should be so eager to come hither, and voluntarily handicap themselves! Can free traders think that the eager seeking for American investments, the transfer of whole factories of workmen to the United States, and the overwhelming flood of immigration now pouring upon us, are but reckless folly? Does the Englishman who buys an American railroad bond, a manufacturer who abandons the old country and sets up a factory in the Merrimack or the Blackstone valley, or an immigrant who comes here to seek his fortune, sigh at the thought of the heavy unnecessary burden he is to take up in transferring his capital, his enterprise or his labor to this Continent? Such questions answer themselves. There is nowhere in the world another place where capital, enterprise and labor are so well remunerated, so

actively and effectively employed, as they are here. To say that the situation would be improved by a change of policy is a mere assumption, based on false premises, sustained by no experience."

Properly understood and harmoniously adjusted, a protective tariff is a great national benefit. But that our tariff—parts of which were brought into operation during the civil war to furnish revenue no longer necessary—sadly needs modification, is not denied by intelligent manufacturers. During the last ten years, as pointed out by our Boston contemporary, great changes have taken place in the methods of production, in the markets and in the requirements of the diversified manufacturing enterprises which have been fostered by the protective tariff. There are very few American manufacturers of any note who will not state as their deliberate judgment that the time has arrived when the tariff should be revised in such a manner as to afford relief in innumerable instances and to simplify the collection of revenues. This could easily be accomplished without seriously interfering with any of the well-established manufacturing industries of the country.

There is a gradual growth of the protective idea in this country, especially in the South and West, where the free trade sentiment has hitherto found its strongholds. Manufactures are rapidly springing up in those sections, and every forge, every spindle and every engine employed constitutes an invincible argument in favor of well regulated protection to American manufactures. We may reasonably expect that in the future manufacturing establishments will grow much more rapidly in those sections than in the Eastern and Middle States. The indications all point that way. It is the logic of political economy that, all other things being equal, manufacturing will gradually centre in the fields where the raw material and food are most largely produced, and these fields are the South and West.

We have said that our code of tariff laws needs modification, but the work should be entrusted to competent hands, and care should be taken to prevent any change that would be calculated to cripple established industries, or to decrease the ability of our working people to purchase the comforts and luxuries of life. To discover the safe and fostering mean between the two extremes of ultra free trade on the one hand and ultra protection on the other is the point to be aimed at, and it is a task which ought to enlist the efforts of the wisest statesmanship.—*New York Shipping List.*

Waste and Thrift.

The loss that is forever going on from the waste of careless and unintelligent labor has received an extraordinary illustration during late years by the thrift which has made cotton-seed an article of revenue. The separation of the seed from the cotton-plant, by the invention of the cotton-gin, was an invaluable discovery; it greatly added to the value of the cotton production of the United States. But it was not until long after the War that any successful use of the cotton-seed itself was attempted. The cotton-seed itself generally was a nuisance. Beyond its partial use as manure, it was considered valueless. But of late years it has become a valuable addition to the domestic products of the Southern States. The once despised cotton-seed has become an important article of commerce.

First, it is exported to England, where for some years it has been employed under rude machinery in the manufacture of oil, which was sent to France and Italy to be used to mix with other oils. The seed is also now largely exported to France for the same purpose. Secondly, the seed is now used for the manufacture of oil in this country, and, after several years of skillful experiment, there is now produced the finest and purest oils. These American oils, because of their purity, are now in demand in France and Italy, where they form the basis of what is sold as olive oil, and where, because of their purity, they enter into general use as food. So great has been the substitution of pure American cotton-seed oil for the olive oil in Italy, that the Italian Parliament has lately doubled the import tax thereon—it being stated that the American oil was largely superseding that which was called olive oil, but known to be liberally adulterated. The olive-growers of Italy have also obtained from the Parliament not only an increase of the protection on cotton-seed oil, but also on the cotton-seed. The olive-growers of Italy suffer from the competition of the cotton seed of the United States. The American oil has, however, attained such a perfection in refining that the demand for it is likely in time to equal the supply. The manufacturers also produce from cotton-seed a quality of lubricating oil so superior in all respects, and capable of production at such small cost, as to promise its general use for that purpose.

The cotton-seed has also been utilized by its conversion into oil-cake, and this oil-cake, described to be of most excellent quality, has already become an article of export, and is now sold in successful competition with other cattle food, not only in Great Britain, but in Germany. Lastly, the seed, all that part of it not convertible into oil or oil-cake, is converted into a compost, which, used as a manure, is especially adapted to the soils of the cotton-growing States.

The point to which we sought to call attention was, that the cotton-seed crop, which is and has always been immensely abundant, and which comparatively a few years ago was a refuse waste, a burden upon the planter, has become an article of

great profit, and so thoroughly has the waste been reclaimed, that every seed will be hereafter gathered and sold, adding its value to that of the crop. The product of the cotton-seed of this country is estimated by hundreds of thousands of tons, and in its original state is worth possibly \$10,000,000. Converted by machinery into oil, oil-cake, and manure, its value is increased by the labor bestowed on it possibly five-fold.

When the modern invention, now successfully struggling into use in the Cotton States, and known as the Clement attachment, becomes general; when by that discovery the cotton will be fed from the plant to the machine; and, while being ginned, will by the same operation be spun into sliver and yarn, then the combination of the cotton-plant and the cotton-seed, and their products, will give to the cultivation of that crop a new vigor and an increased profit.—*Chicago Tribune.*

The State of Trade.

From the New York *Public's* summary of the state of trade as indicated by the clearing house returns of the nineteen principal cities of the country for the fourth week of May, the BULLETIN quotes as follows: "Business is still at high tide. Exchanges show that the reports of general stagnation in trade which have been persistently circulated in the vicinity of the Stock Exchange are not in accord with the facts. The amount at New York last week has been exceeded only three times in the history of the clearing house, although it was the fourth week of the month and dealings in stocks were by no means the heaviest on record. Exchanges at Boston last week were the largest ever known at that or any other American city except New York. The aggregate outside this city has never been equaled in the fourth week of a month, usually the smallest, and rarely surpassed in any week. In comparison with the corresponding week of last year, gains appear at every city except one and the decrease at San Francisco is insignificant. The increase of 111.6 per cent at Boston is especially remarkable." The amount of exchanges for the week ended May 21 at San Francisco, and for that ended May 28 at all the other cities, was \$1,480,334,849, showing an increase of 49.4 per cent, as compared with the corresponding week of last year. Of the amount stated, \$281,608,708 represented exchanges effected through clearing houses outside of New York. The gain which this latter sum exhibits in comparison with last year is 44.6 per cent. "It should be remembered," the *Public* says, "that the returns for last week do not differ essentially from those for other weeks in May. The aggregate for New York in May (\$4,881,166,927) is the largest monthly report in the history of the clearing house; nor was this extraordinary amount due to unprecedented dealings in stocks, for after deducting double the market value of stocks sold the remaining exchanges for the month were at least \$3,094,189,687, against \$2,829,528,142 for the month of January, hitherto the largest on record. The aggregate for all cities outside New York, though not yet precisely known, will closely approach and may exceed that of last December (\$1,229,243,680), which has never been exceeded in any other month. All these comparisons show clearly that the volume of business has been surprisingly large, and that no expectations are reliable which are based upon a supposition that the general business of the country has been dull or declining in volume. Exchanges do not show whether the people have been making or losing money, but they do show with greater fidelity than any other source of information whether dealings and payments have been large or small. Having in mind the fact that the course of prices during the past month has been generally upward, though the changes in most instances have been moderate and that there has been no disturbance in the money market, we are forced to infer that the business of the country has been not only unprecedented in volume, but on the whole unusually prosperous."

DRY GOODS AT THE EAST.

The past week has witnessed a continuation of the improvement lately noted in the condition of the general dry goods trade at the East. "Supplies of cotton and woolen goods," says a leading New York authority, "have been actively sought, and the volume of business has exceeded anything of a like period for many months. Buyers for some time past have rigidly pursued the hand to mouth policy, refusing to enter the market only for such lines that were actually necessary at the moment, but now a free demand is experienced from consumers, and dealers find themselves with insufficient quantities to meet the increased inquiries made upon them, and they are therefore anxious to secure additions to their assortments. Stocks here of cottons are unusually light with agents, and manufacturers have quite an abundance of orders yet unfilled that were taken early in the season. Prices have in consequence undergone an appreciation, and at the close a still further rise was promised. Woolens are in fair supply, but stocks have been considerably reduced by the recent demands made for new selections, and the tone of the market has improved, and by some an early advance is confidently predicted. During the lengthy period of inaction on home account, there has been a steady outlet for foreign markets, and it is to this fact due that so many lines of cotton are at present difficult to secure." Returns of the imports of foreign dry goods at the port of New York for the month of May show a falling off of \$2,267,711 as

compared with the corresponding month last year, but an excess of \$718,876 for the same month in 1879. For the past five months there has been a decrease of \$9,086,052 as compared with the same period in 1880, but \$9,390,710 more than for the same time in 1879. The supply of goods in bond at that port does not favor an increase in the figures for the remainder of the year, and it is thought that any change would be more likely to arise through the importation of goods of improved cost rather than the importation of increased quantities.

BOOTS AND SHOES.

The condition of the Eastern boot and shoe market is very gratifying to all interested in the trade. "Buyers have evidently come to the conclusion," says the Boston *Commercial Bulletin*, "that the present is as favorable a time for placing orders as is likely to occur this season. There is a very steady feeling throughout the market, and though but little attention has yet been paid to men's shoes, the firm tone of the leather market will prevent any lower quotations for such goods than those which are now being named by manufacturers. There are now nearly 100 buyers in our market. A feature of the market which is worthy of note is the disposition to have goods made more nearly like the sample by which they were sold than they have been of late years. The same tendency is apparent in all branches of trade, and manufacturers are paying special attention to securing regular lines of leather in order that their goods may run as uniform as possible in quality. This feature tends to the advantage of the maker of leather, since, if the latter can get a shoe manufacturer to purchase his stock for samples, he has a better chance of holding him as a customer throughout the entire season."

Is the Iron Trade "in a Bad Way?"

The *Iron Age* seems to think that the iron trade of the country is at present "in a very bad way." In an editorial resume of the condition of things in the trade named, the journal referred to says:

"Just what our annual rate of overproduction is we cannot say; but supposing that it is only a few hundred thousand tons, this estimate does not help the matter any. It is true that a speculative spurt or a scare among consumers would relieve the market temporarily, but what would this benefit us? The consumption of the country cannot be increased under any circumstances in a less time than from 12 to 18 months. The manufacturing capacity of the country is taxed to its limit, and every piece of machinery used in shaping or working iron is driven to the breaking point. This capacity cannot be extended. * * * We cannot place an order for a locomotive to be built under a year, for a cupola to be erected within six months, or for tools to work iron except at the convenience of manufacturers who are now months behind their orders. This means simply that we have reached our maximum consumption; and if with such a consumption we are still piling up iron at furnaces and witnessing a steady decline in prices, he must be an optimist indeed who can see any relief for the iron trade except through a reduced production. This, to use a familiar expression, is 'just where the shoe pinches.' Everybody in the business would like to see everybody else blow out his furnace or close his mill; but for himself he prefers to hold on a little longer and take the chance of some miraculous turn for the better. * * * The iron trade cannot gain a sound basis except by a suspension of production wherever production does not pay. Such a contraction is needed for another reason. Labor is now getting, on the average, at least 30 per cent more wages than employers in the iron trade can afford to pay. Skilled labor in rolling mills is now earning about 40 per cent more than it ever earned, so far as we can learn, when bar iron was selling at 25 cents and under; unskilled labor about 25 per cent. No reduction is possible in view of the admitted scarcity of labor which now exists, and which must continue until production is materially curtailed. These are unpleasant facts, but we state them in good faith. If they are facts, it would be folly to conceal them, and an attempt, under the circumstances, to avert what seems to be the inevitable downward tendency of prices, would be as futile as an effort to stay Niagara with a spoon. Unless some unforeseen and wholly improbable contingency changes the whole position, we must reach a condition in which recovery is possible only by a return to something very like the situation in 1877."

As the vast proportions of the iron trade cause its prosperity to be in an important degree a condition of prosperity in trade at large, the truth or falsity of the gloomy forebodings of the *Iron Age* is a matter of general interest. There are reasons for believing that the fears which that journal expresses are not fully warranted by existing facts. In the first place, the iron business is not now nearly so dull as it superficially appears. As Messrs. T. J. Pope & Co., of New York, point out in a recently issued circular, "the movement of the trade for the late winter and early spring months has been unusually large—in fact, enormous; but it has not been through the usual channels." It has been through the unusual channels which were created by the great overflow of speculation in 1879 and 1880. To quote more at length from Messrs. Pope & Co.'s circular:

"It is well known that the reports circulated during that period, from many sources, of the impossibility of American production, however greatly stimulated, being able to supply the current or incoming demand for consumption, led not only to vastly increased domestic production, but also induced consumers, speculators, and the regular trade to draw immense present and future supplies from all parts of the world. Instances at the time were by no means infrequent of consumers and traders, whose purchases had been previously confined to lots of 50 to 100 tons at the most, sending orders abroad for lots of 1,000 tons and upward of raw and manufactured material. These supplies arriving were stored, not only in city yards, but very frequently in places more or less remote from the great commercial centres, and their sale during

the past season has diverted trade from its usual course, thus preventing the commercial centres from realizing the true volume of current business. No wonder then that these causes, with the unduly stimulated production of domestic works, have kept prices down and made trade appear dull."

Within the past few weeks, as the BULLETIN'S Eastern exchanges show, there have been thrown upon the market unusually large lots of pig iron, made up of imports, withdrawals from bond, and an increasing average output of furnaces. Yet, as has been justly observed, the resulting depression in prices has not produced the same consequences which a like excess would have formerly produced. As the current issue of *Bradstreet's* says: "A break was confidently predicted, but it has not come yet. Consumption is steadily increasing, and the dangers feared are now more remote than ever."

The fact is, the demand for iron in this country in the coming summer will be greater than ever before. The country is growing in population and wealth at a rate which it is difficult to realize. The addition to the inhabitants of the United States which will be made by immigration alone during the current year will be probably not less than three quarters of a million. The character of this year's immigrants, who are comparatively well-educated and well-to-do, should not be lost sight of in this connection. The activity of capital in undertaking new enterprises is leading to enormous calls for iron and steel rails and for all kinds of iron used in building ships, bridges and cars. To meet these heavy requirements, the capacity of old iron and steel works all over the country is being rapidly enlarged.

The iron trade may not at the present moment be as prosperous as could be wished, but the future furnishes ground for hope to those not constitutionally predisposed to "the blues."

Glucose and Grape Sugar.

The *Popular Science Monthly* for June has a timely article by Prof. H. W. Wiley on the manufacture of glucose and of grape sugar, the latter being produced simply by extending the process for making the former. Glucose is a sweet syrup made from corn starch, resembling in appearance the molasses of cane sugar, and by reasoning of its greater cheapness largely affecting the consumption of the cane product. Grape sugar is made to resemble a finely powdered sugar, and is used extensively to adulterate the sugar of commerce. The cheapness with which glucose syrup and grape syrup can be produced has led to their extensive use. The most flourishing manufactories are at the West, where corn was bought last year at a little over thirty cents per bushel. As from twenty-six to thirty-two pounds of glucose syrup or of grape sugar are made from a bushel of corn, the average cost of either to the manufacturer is about one cent per pound. As he sells either articles at three to four cents per pound, the business is a very lucrative one, and is rapidly extending. There are twenty immense glucose factories either built or in process of construction in the United States. Already a capital of over \$2,000,000 is invested in the business. The daily consumption of corn for the manufacture of glucose is about 35,000 bushels and the annual amount used is about 11,000,000 bushels. All these factories have sprung up in the last twelve years. They are run day and night, Sundays included, to meet the demand, and still fail to supply it.

Apropos of the statements made in Prof. Wiley's article, the *New York Journal of Commerce* says: "Notwithstanding these notorious facts, it is almost impossible to find anybody willing to admit that he buys glucose or uses it for any purpose. Its existence is never made known by newspaper advertisements or placards. It is never bottled, boxed or barreled under its own name. It is as carefully screened from public view as nitro-glycerine. But for patient investigators like Prof. Wiley the world would never know what becomes of the enormous annual product of all these glucose factories. The paper to which we refer confirms current reports. There is no doubt that glucose is largely used in the preparation of table syrups and candies, for brewing and for artificial honey. Nine-tenths of the cheap candies are made of glucose. It is hard to find a table syrup wholly free from this adulteration. Glucose is present in most of the beer now brewed. Most impudent of all its intrusions is that of direct competition with the bees. The bee himself is not as busy as the glucose manipulator. The latter puts up a 'honey' of which the waxen cells are made of paraffine and the contents of snow-white glucose. The fraudulent comb and honey are handsomer than the finest white clover 'Vermont,' and can be sold at half the price at a great profit. This story would be deemed incredible but for the positive assurance of men like Prof. Wiley. To the question, 'is glucose wholesome?' the Professor replies that it all depends on the presence or absence of sulphuric acid, lime and copper, which are apt to find their way into the article through imperfect chemical treatment. But whether healthful or not, glucose is a false pretense, when sold for the thing it is not, and should be brought under proper control by legislation."

The work of shortening channels of communication continues to go on actively in all parts of the world. During the past week the Greek Government has signed a decree granting De Lesseps, the French engineer, a concession to cut a canal through the Isthmus of Corinth. The work will probably be commenced in 1882 and completed in five years.

The Abundance of Money.

The continued abundance of money and the low rates at which it is afforded, coupled with the extraordinary inducements offered for embarking in new and important enterprises, some of them created upon a vast scale, contemplating the expenditure or absorption of millions, give peculiar force to the recent success of the Secretary of the Treasury in refunding the six and five per cent bonds into 3½'s, and at the same time suggest the question, how will the idle money be employed during the next twelve months?

In the meantime the disbursements of the Treasury are large, gold is being produced at the rate of \$2,000,000 per month, the banking circulation is increasing, silver certificates are becoming more numerous and the importations of specie continue on a considerable scale.

Statistics show that our currency has increased over \$46,000,000 since January 1, and over \$300,000,000 since July 1, 1879. Parenthetically, no chance for the greenback argument here.

Nor is this vast sum of money concentrated in certain sections of the country, but there appears to be an abundance of currency in all the distributing points, North, South, East and West. The weekly exchanges of the clearing houses indicate this. The present financial position may be said to be phenomenal, yet it is healthy in its character and apparently rests upon a basis of hard rock.

The banks, public and private, trust companies and capitalists cannot afford to lock up their money, notwithstanding its cheapness; and hence the vast surplus is finding employment in various channels. At the present time the railroad managers of the country, the kings and those who would aspire to be kings, are making gigantic moves on the chess-board, while railroad stocks and bonds of unborn railroads are being purchased by the million. For instance, one concern has recently increased its capital stock \$7,000,000, and another one to the amount of \$49,000,000—and both of these roads will not be completed for years. The amount of money being invested in non-dividend paying stocks and bonds is enormous.

The conservative and croaker may well stand aghast at the stupendous and brilliant movements now going on in the financial world.—*Boston Commercial Bulletin*.

THE railroad interest is said to be at the bottom of the opposition to the entire removal of tolls on the freight passing through the Erie canal. Referring to the matter, the *New York Shipping List* says:

"Our railroad managers are not fair 'give and take' people. They want everything. There is business enough during the navigation season for the entire capacity of the railroads and the canals. When the canals are closed in winter the railroads can and do make arbitrary rates of transportation, and no man can say them nay."

The railway interest, or a certain portion of it, is said also to be at the bottom of much of the hostility to the Hennepin canal project. The *Chicago Inter-Ocean* calls attention to this phase of the monopoly question, and adds:

"It is significant that the demand for cheap transportation is not accepted as a declaration of war by any railroad company dependent on business, rather than intrigue and sharp practice, for its prosperity. The men who furnished the capital to build the railroads of the country do not, as a rule, now control them. These roads were built in answer to the demands of trade, or on intuitions as to the future movements of trade. The danger now is that the men forming combinations to control the engineering conceived in a spirit of enterprise will prostitute it to merely personal ends, and in so doing thwart all the further demands in the interest of legitimate business and smother all enterprise that does not meet with their approval. The indications of careful organization are, as we have said, apparent enough to excite the suspicions and fears of the people. There is call for concentration of business talent and energy against this alien power. The producer, the shipper, and the consumer all are interested in the movement to cheapen transportation, and in such a movement competition must be counted as a leading factor."

COMPLAINTS of injury on account of railway discrimination are not confined to the United States. English merchants are just now vigorously "kicking" against a grievance of the sort. A special telegram from London bearing date of Tuesday last, says:

"The select committee of the House of Commons on railway rates held another meeting on yesterday, and secured some pertinent facts in regard to the favor shown American shippers. A member of the Cheshire Chamber of Commerce testified that the charges on American cheese from Liverpool to London were only twenty-five shillings, while fifty-two shillings per ton is charged from any way-stations to London, if even twenty miles nearer than Liverpool. Only one-half as much is charged for transportation of American meats as for English or Irish."

Whether there is any ground for the belief that special favor is shown by the railway companies to Americans, it is just now, at this distance, impossible to determine. Not improbably, the prejudice of British producers, who see their own commodities crowded out of their own markets by competing commodities from this country, has something to do with this part of the charge. That the railways discriminate in favor of freights from Liverpool, however, is doubtless true. American provisions and dairy products need no improper advantage in order to secure sale in the markets of the Old World; and Americans, who are themselves largely the victims of railway injustice, will sympathize with their British brethren, and rejoice if the latter are successful in having unjust discrimination by railways abolished.

Business News.

A DES MOINES special says the losses to Iowa farmers this year from poor seed will amount to \$2,000,000.

THE German Reichstag has approved the Government proposal fixing the duty on flour at 3 marks per 100 kilograms.

THE employees of the five iron mills at Cincinnati, Ohio, nearly 2,000 in number, went out on a strike on Tuesday last.

A LEADING Milwaukee savings bank has notified depositors, during the past week, that hereafter interest on deposits placed in its care will be computed at the rate of 3 per cent per annum.

A LARGE establishment for the manufacture of ice is in process of erection in Washington. It is expected that the product of the manufactory will successfully compete with the ice imported from Maine.

A DISPATCH from Glasgow, Scotland, dated June 2, says: "Nearly all the cattle by the steamer *Phoenician*, arrived at Glasgow from Boston, were found to be affected with the foot and mouth disease. The slaughtered carcasses will be boiled down."

THE Delaware & Hudson Canal Company have issued a circular, under date of June 2, giving prices of Lackawanna coal as follows: Per ton of 2240 pounds, furnace lump, steamer lump and grate, each \$3.90; egg, \$4.05; stove, \$4.20; chestnut, \$4.

At a meeting of the New York Chamber of Commerce held on Thursday last, a resolution was adopted, declaring that the present system of examination for appointments to places in the Custom House has been of great value to the mercantile community and should be continued and extended.

THE Post-office Department has issued an order declaring flour or other powdered substances unavailable except when put up in transparent bags and sealed that no particle can sift through. The bags must be enclosed in boxes or tubes made of hard wood or metal, with sliding or clasp or screw lids, and without sharp corners.

DOW'S GRAIN elevator at Brooklyn, New York, was in operation on the last day of May. It is the largest structure of its kind in the world, having a storage capacity of 2,500,000 bushels, and transfer and dockage facilities by means of which half a dozen or more vessels can be loaded at once. The cost of the structure was nearly \$2,000,000.

NEGOTIATIONS for a transfer of the Panama Railroad to the Lessees Panama Canal Company are virtually concluded. It is understood that the control of the railroad company is obtained by the purchase of its stock. It is announced that the Panama Canal can be constructed in four years at a cost of 100,000,000 francs below the original estimate.

A MEETING of holders of Confederate cotton bonds has been held in London during the past week. It is believed that most of those concerned in the meeting have no hope that the bonds will ever be paid, but their object in agitating the matter is to bring others to hope so, and by this means to get rid of the "securities" at advantageous rates. Strange as it may seem, Confederate bonds now sell in the London market at 3@5 per cent of their face value. English investors must be very anxious to "place" their money.

THE St. Louis Board of Trade has furnished a business "sensation" during the past week. Two firms belonging to the Board succeeded in cornering May wheat, and when the time for making settlements came, the "shorts" "kicked." The matter was submitted for arbitration to a Call Board Committee, which decided that settlements should be made on the basis of 55 cents per bushel. The "shorts," however, refused to be bound by this decision, and appealed the whole matter to the Board of Directors of the Exchange.

THE ship builders in Bath, Maine, have under consideration a proposition to establish an iron ship-building yard at that port. Captain Goss, of the firm of Goss & Sawyer, prominent wooden ship builders, has announced his readiness to subscribe \$100,000 toward such an industry, provided the citizens of Bath would subscribe \$200,000 more; and another party stands ready to give the new ship-yard its first contract, and take an interest of \$25,000 at least in the first vessel. A committee of citizens has been appointed to solicit subscriptions.

CONCERNING the reported cutting of freight rates by the trunk lines of railways, the *New York Commercial Bulletin* of June 1 has the following: "Commissioner Fink denies very emphatically that the cutting on East-bound freight has been resumed; but, on the other hand, the Chicago papers affirm with great positiveness that such is the case. The matter thus resolves itself into a question of veracity, which there would seem to be no way of settling save by the testimony of the merchants who are getting the alleged 'cuts,' and of course these cannot be expected to be communicative with reference to so delicate a matter."

Not long ago silverite papers all over the country were triumphantly calling attention to the statistics of circulation of the standard silver dollars. Now, however, these statistics seem to have lost interest for them. Late advices from Washington are to the effect that the circulation of standard silver dollars from the treasury vaults has practically stopped altogether. During the fall and early

winter there was quite a demand for this currency for the purpose of moving the crops. That demand stopped when the crop movement was over. Since the first of January last there has been no call for silver. All of the dollars that have been coined since that date remained in the treasury. Further than this, silver in circulation has found its way back into the vaults, and the amount outstanding has steadily decreased.

At last the general business outlook on the Pacific slope is one of encouragement. The *Sacramento Bee*, of May 23, in an editorial on the present commercial and industrial condition of California, contains the following:

"If the general tone of our exchanges can be relied upon as the basis for an intelligent opinion in the matter, it is evident that the State is fairly launched upon an era of prosperity. The 'business boom' which commenced in the East a year or so ago appears to have finally struck California, as reports from all sections of the State indicate a healthy revival of trade and industry. It has taken us a long time to overcome the depression resulting from comparatively recent local causes—mainly the wild speculative fever which attacked nearly all classes of citizens a few years ago and brought disaster into mercantile as well as other circles. So long as Californians adhere to the task of developing the great and varied resources of their State, they cannot help but succeed, which fact they seem now to fully appreciate. The local press of the northern coast counties is jubilant over the flush times in that section. In Mendocino every mountain ridge is swarming with bark-peelers; every gulch, with tie and post splitters; while each rivulet large enough for a dam has its saw mill in full blast. All this, coupled with a fine grass and grain season, wool a good price, a fair prospect for hops, etc., warrant strong hopes for future prosperity."

EACH succeeding week, says a leading financial paper, furnishes additional evidence of the growth of public interest in mining enterprises. But almost every week furnishes also some incident that is well calculated to check that growth—a manipulated speculation reaches a sudden collapse or some expert testimony as to value proves incorrect. Yet the interest does grow because there are properties that have proved more than was promised in the prospectuses, and, although the names of such properties are mentioned only once where those of a doubtful kind are spoken of a hundred times, those persons who have invested prudently and well are silent workers in their respective spheres, educating the public mind in the belief that there is such a thing as legitimate and profitable mining of the precious metals. But a general arraignment of all mining enterprises may be expected to be heard so long as there are men who, before loaning \$1,000 on a mortgage on their twenty-year neighbor's house, would insist upon a search of the record, and yet who will, on the word of a stranger, risk \$20,000 or more in a new mining stock. Prudence and the use of ordinary intelligence in mining investments will be as well repaid as in other pursuits, but "happy-go-lucky" ventures in mines are not exempt from the penalties that are attached to all ventures of that character.

A TEN-dollar bill will hire your family doctor to order you to go off on a six weeks' trip for your health.

A LITTLE man who was twitted on the shortness of his legs, replied that they were long enough to reach to the ground.

SOME females have just been arrested in Kentucky for the manufacture of illicit whisky. This is the first recorded instance of a woman keeping still.

ENGRAVERS should not neglect orthography. An engraver once made this mistake: "Mr. and Mrs. — respectfully request your presents at the marriage of their daughter."

It is never well to joke on serious subjects, for before you know it you may be bitten. Archbishop Land, who was a man of small stature, was asked, when at dinner with Charles I. to say grace. He turned jocosely to the King's jester, who was present, and asked him to say it instead. The jester gravely bowed his head and said solemnly, "Great praise be given to God and little laud to the devil. Amen."

OLD UNCLE MOSE, a Galveston paper reports, went into Levi Schaumburg's store, on Austin avenue, to buy a silk handkerchief, but was almost paralyzed on learning the price. Levi explained that the high price of silk goods was caused by some disease among the silk worms. "How much does yer ask for dis heah piece ob tape?" asked the old man. "Ten cents," was the reply. "Ten cents! Jewhiliks! so de tape has riz too—I spose de cause ob dat am because dar's sumfin de matta wid de tape wums. Dis seems to be gwine ter be a mighty tough yeah on wums, any how."

A GENTLEMAN calls at a French jeweller's in London to have a memorial ring, containing the hair of relatives, repaired. The good man said: "Eh bien! Ya-as, it shall be done," continuing, "zare is nothing like ze hair, it last a P'eternite, wiz care. Now, here is pretty ting, vatch chain moch better zan gold; beside it make you tink. Suppose you are out wiz friends, you look at your vatch vith gold chain, and you say it is 10 o'clock, and you put him back; zat is all. But suppose you have a chain of madame's hair, zea you remember; you say it is 10 o'clock, yere is my poor wife waiting for me, I shall go; chez moi. I shall go home."

(Continued from page 22.)

from the beginning in what respect we find fault with the expert, relative to his non-committal action on the results of his own investigations.

Of course our "celebrated competitors" are annoyed at having been beaten in the race by the "Engine of Progress," and we expected to see them array themselves in solid line to prevent our receiving our well deserved laurels, or, if that were impossible, to reduce as much as in their power, our success.

But, as we were victorious in a foreign land, in the face of the most strenuous opposition, and after the most rigid examination by a jury of eminent engineers of all nations, so we expected our engine to acquit itself at the Millers' Exposition, and when we entered the friendly contest because we were urged into it, we were determined to abide by the results of the tests, and expected the same from our competitors.

The report of the expert, and the positions of the several engines are now before the public, their decision is practically made, and no amount of remonstrance or protesting can change the verdict.

The discussion, if desired, can be continued indefinitely. Yours truly,

JEROME WHELOCK.

WORCESTER, Mass., May 7th, 1881.

AFFIDAVIT OF J. H. MANNING.

CINCINNATI, March 30, 1881.

Office of J. H. Manning, Manufacturer of Steam Heating Apparatus, 173 Race Street.

I, J. H. Manning, do hereby declare that I had general charge of the steam and water pipes and fittings at the late Millers' Exposition held in Cincinnati in June last, and I declare that I was present on the morning of June 26th, about my general examination, when the "Wheelock" engine was being tested "non-condensing," and I hereby declare that I saw water being drawn from the heater through a 2½ inch valve that was nearly or quite open, and I declare that said valve had been open before I saw it, and it was full open when I saw it, and the man in charge was not near it. I immediately called attention to this, as I knew it was water wasted that had been charged to the "Wheelock" engine then being tested. Mr. Wheelock and Mr. John W. Hill, chief expert, were the parties notified. The object of the man in charge, as he expressed to me was to draw the mud from the heater after a given use "as being necessary to do from time to time to keep the heater clean."

Respectfully yours,

(Signed and sworn to)

J. H. MANNING.

The Flour Milling Interest.

Thirty years ago, or before grain elevators came into general use, the bulk of our exports of bread stuffs consisted of flour, for the principal reason that the expense attending the shipment of wheat. But when the elevator system came in the old order of things was reversed. It was cheaper to ship wheat than flour, and English buyers gave the former the preference for the additional reason that it gave their millers the profits attending its conversion into flour, and also the offal, which as provender for live stock is a much more important item in Great Britain than it is in this country. For a quarter of a century, therefore, the great bulk of our exports of bread stuffs have been in the shape of grain, but with the vast improvement in milling operations in this country, together with the cheapening of the process of conversion, flour is again beginning to compete with wheat, and the English commercial organs state that the rapid increase of the imports of the former into the United Kingdom is cutting into the traffic of English millers and seriously impairing their business. One reason why the shipments of flour have increased so rapidly during the last few years, is the fact that export grades are packed mainly in sacks, instead of barrels, and is shipped directly from the milling districts of the interior to the foreign markets on through bills of lading by rail and steamship, thus effecting a material saving to the consumer. While there is no reason for believing that the exportation of flour will again take precedence of wheat, the great increase in the shipments of flour is conducive to the prosperity of our milling interests, which had been for a series of years in a greatly depressed condition. The process of converting wheat into flour having come into general use in the great milling districts of the country, American flour now compares favorably with that of Austro Hungary and Spain, which in point of general excellence, at one time bore off the palm. The flour that we export to Europe consists mainly of low and medium grades, of which there has been little or no accumulation this season, but of the high grades the production has been in excess of the demand, and the stock has of late become burdensome, with the consequence of relatively low prices current. This is a hint which should not be overlooked by American millers.—N. Y. Shipping List.

Roumanian Wheat and Flour Trade.

A correspondent of the UNITED STATES MILLER furnishes the following information: "There are two general varieties of wheat grown in Roumania—the soft and the hard; but the latter variety being more suitable to the soil and climate, it is generally adopted by the Roumanian farmers. The winter wheat is more productive than that shown in the spring of the year. Therefore, the latter is, as a general rule, used only in cases where the severity of the cold, or when there was not sufficient time in the preceding autumn to sow the whole of the area set apart by the farmer for his wheat crop. The average weight of Roumanian wheat is from 58.4 lb to 60.8 lb. per bushel. It has been known, however, to go as high as 64 lb. per bushel. In 1865 there were 6,771 flour mills in Roumania, ranging from the steam-mill of the cities to windmills and small establishments of a single 'run of stone,' worked by some mountain rivulet or by the force of wind. The millstones are quarried in the Principality and as the 'millstone grit' is a geological formation of rare occurrence, the Roumanian quarries of that stone may become very valuable at some future day. Wheat, maize, millet, rye, and barley are ground in these mills to furnish sustenance for man and beast. There are 33 steam flour mills in the country, the most important one being established at Braila, and it has a capacity of 160,000 sacks of flour per annum, each sack weighing 170 lb."

WHAT CHEMISTS ARE DOING.—Chemists are steadily revolutionizing old processes and ruining old industries by their synthetic methods of making the counterfeits of natural products. The madder industry of France was the first to feel the power of modern chemistry, and now madder is a comparatively useless crop. The coloring principle which was so valuable to the dyer was analysed by the chemist, and separated into its elements; but the chemist went farther; he found a comparatively waste substance which, by a little manipulation, would yield just the same elements as the madder-root, and in just the same proportions. Consequently it must, except under special circumstances, be identical in constitution with the natural product. The indigo planters of India are threatened with a similar extinction, for the coloring-matter known as indigo has been synthetically prepared in the chemist's laboratory, and only awaits a cheaper raw material than the indigo plant to gradually bring about the decline of one of the most profitable crops of India. Citric acid is another notable instance of the triumph of synthetical chemistry; and latterly a process of preparing vanillin, the essential oil of vanilla, has been patented in this country. By-and-by chemistry will make for us the most delicate perfumes and the most costly flavours out of the waste substances of other industries.—The British Mail.

A NEW LACE-MAKING MACHINE.—Several of the French journals are at present much occupied with a statement that a machine has been invented for the manufacture of "real" lace—that is, such lace as has hitherto been manufactured only by hand. The *Moniteur des Fils et Tissus* goes so far as to say that any one who sees the machine working will abandon all idea of the product being "imitation" lace, and will recognize in the appliance not only a veritable automatic lace-maker, but one which with the supervision of a single operative will produce the work of several hundreds of living lace-makers. Amongst the laces which can be made are Valenciennes (round or square mesh), Malines, Blondes, Guipures, and Chantilly. Negotiations are said to be now in progress for the sale of the patent rights in the United States for £200,000, and in England for a similar sum. Finally, it is calculated that a loom costing £2,400 will yield an annual profit of £1,760, or 74 per cent. It is not stated at what prices the new laces are to be sold, but we presume that the calculation is based on the prices of the hand-made articles, as we are informed that the machines will be used only for supplying the wholesale trade, and not for directly supplying the public, so that the interests of the makers of lace by hand will not be injured."

The dam in the Milwaukee River has suffered considerably by the late floods. It will be fully repaired. It proved of great service to the city lately by holding back an immense quantity of ice until much of it had thawed. Had it not been for the dam all the bridges on the river would doubtless have been carried away.

NEWS.

EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

C. H. Pugh, miller at Rough Creek, Va., is dead.

John Perry, miller of Scottsville, N. C., is dead.

Harvey W. Beach, miller, Branford, Ct., is dead.

A mill is to be built at Hector, Minn., this season.

The Welland Canal opened for business May 4th.

P. Pincombe, a miller of Strathroy, Ontario, has failed.

Pillsbury A mill at Minneapolis is to be lit by electricity.

Wise Bros. are preparing to build a mill at Canfield, Colorado.

W. J. Pope & Co., millers at Charlemagne, Quebec, have failed.

Harrington & Rickman, millers at Washington, Ill., have failed.

BURNED.—Wm. H. Stephens mill at Stanton, Mich. No insurance.

J. W. Parks succeeds G. S. Nevians, deceased, in Bushnell, Ill.

J. C. Scott & Co., millers at Pemberville, Ohio, succeed Leroy Moore.

The first vessel passed through the straits of Mackinaw this year May 4th.

BURNED.—Zabel & Hussery's flour mill at Lanesville, Ind., burned recently.

Messrs. Hanert & Wambold have completed their new flume at Appleton, Wis.

B. C. Henley, miller of Columbus, Ks., is succeeded by Henley & Henderson.

The Eagle Mill at New Ulm, Minn., was badly damaged by the recent floods.

A two-run water mill is being built at Beaver City, Neb., for D. H. Lashley.

Died.—E. T. Chester, of the milling firm of E. T. & O. D. Chester, Camden, Mich.

Messrs. Harper, Perkins & Co., millers at Bayliss, Ill., have made an assignment.

DIED.—David Milne, head miller of the Galaxy Mills, at Minneapolis, April 30.

Part of E. D. Brown's milldam at Plover, Wis., was washed out by the recent floods.

M. V. Linnabury, of Mt. Morris, Mich., has sold his mill to J. W. Pool for \$15,000.

BURNED.—Freer & Hunter's flour mill at Lettsville, Ia., was burned recently. Insured.

BURNED.—C. J. Woolsey's flour mill at Baldwin, Wis. Loss \$8,000, Insurance \$2,000.

John H. Hornaday, of West Lebanon, Ind., is erecting a three-run new process flouring mill.

BURNED.—T. D. Osmer's feed mill in Minneapolis, Minn. Loss about \$2,500. No insurance.

The largest starch factory in the world will be erected in Des Moines, Iowa, during the present year.

Spivak Bros. of Sunrise, Minn., are tearing down their mill, and will replace it with a fine new one.

Dodds & Whitmyer, millers of New Galilee, Pa., have dissolved partnership. John A. Dodds continues.

Levi Falk, of Mt. Cory, O., is building a custom flouring mill and elevator, driven by a stationary engine.

BURNED.—May 1, at Louisville, Harrison Co., Ind., the flouring mill owned by Seable & Co. Loss, \$10,000.

The Wabash Railroad Co. will build an immense grain elevator this season in Chicago on Thirty-third street.

A. R. Graham, of Ogle, Pa., is remodeling his combined water and steam mill to the new process style of milling.

The last Minnesota legislature passed a law providing for the rigid inspection of all steam boilers at stated intervals.

G. A. Williams feed mill and foundry at Lake Mills, Wis., burned May 6th. Loss \$1200. Insurance light.

The Girard Point Storage Co., will build an elevator near Philadelphia this season with a capacity of 2,000,000 bushels.

A large elevator is in process of erection at Parsons, Kan. The proprietors are the well-known millers, W. S. Hoke & Co.

Colorado millers decided to advise farmers to sow Siberian wheat this year, and a considerable quantity has been sown.

California expects to ship flour by way of the Southern Pacific Railroad to Galveston, and thence by steamer to England.

James W. Pye has recently been appointed to the position of milling engineer for The Pray Manufacturing Co. of Minneapolis.

Nordyke & Marmon Co., of Indianapolis, Ind., are remodeling the mill of Charles Gale, at Cumberland, Ind., to the new process.

New Orleans is to have a new Cotton Exchange building. It will cost including the price of ground (\$87,000) nearly \$300,000.

R. C. Rusk, of Brighton, Iowa, is building a large merchant and custom mill at Brighton, to be driven by one 50 and one 44-inch Leffel turbines.

It is reported that the Janesville, Wis., millers will endeavor to secure the removal of the dam at Indian Ford, some miles above Janesville.

Messrs. Scott & Holston are about to build a flourmill at Duluth, Minn. They have purchased the ground and are now having the plans made.

The citizens of Boulder, Colorado are anxious to have a grain buyer locate there and build an elevator. Much grain is raised in the vicinity.

G. W. Davis & Co., of Farmville, Va., have given their order for a 100 barrel combined stone and roller mill to Nordyke & Marmon Co., of Indianapolis, Ind.

James Courand, of Castroville, Tex., is remodeling his mill to the new process, using machinery furnished him by Nordyke & Marmon Co., of Indianapolis, Ind.

The Cokato Elevator Co., of Cokato, Minn., will build a new elevator this summer in place of the one recently destroyed. The new one will have a capacity of 50,000 bushels.

Messrs. Jameson & Upton, of Springerton, Ill., are about to build a two-run steam mill, which is being manufactured for them by Nordyke & Marmon Co., of Indianapolis, Ind.

C. H. Miller & Bro., of Junction City, Kan., have commenced the erection of a four-run steam mill, using machinery made for them by Nordyke & Marmon Co., of Indianapolis, Ind.

BURNED.—The Galloway mill at Fond du Lac, Wis., operated by T. S. Henry & Son, burned May 1st. Fire caused by a hot box in new machinery. Loss about \$25,000. Insurance, \$10,000.

A 100 barrel combined roller and stone mill is being built at Louisville, O., for Jacob Gieb, formerly of Osnaburg, same state. The mill will have all the latest improved machinery and will be operated on the best methods.

Hoppinjan & Burning, of Ferdinand, Ind., are the prospective proprietors of a new three-run new process steam mill which is being built from machinery furnished them by Nordyke & Marmon Co., of Indianapolis, Ind.

Henry L. Marsh, of Marshville, Mich., is building a five-run water mill driven by two 44-inch Leffel wheels, which, together with balance of the machinery, is furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

Two mills at Martinsville, Ind., owned respectively by Thornburg & Small, and E. E. Branch, are being overhauled and remodeled to the new process, with machinery furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

Nordyke & Marmon Co., of Indianapolis, Ind., are remodeling Dwyer Bros., mill at Harrisburg, Ill., to the latest improvements in new process milling. The purifiers, rolls, etc., together with new stones and bolt chests will make almost an entire new mill.

A Mr. Kenneman, of Stillwater, Minn., recently came near losing his life by being caught in some gearing in the Florence grist mill. His companion August Shurmuly with great presence of mind as soon as he saw the danger threw his arms around him and held him until every stitch of clothing was torn from him but stockings and boots.

Hiram Quante & Co., of Metropolis, Ill., have contracted with Nordyke & Marmon Co., of Indianapolis, Ind., for a 125 barrel combined roller and stone mill, driven by a Corliss engine. The mill is situated in a very favorable position on the Ohio river for shipping and receiving grain. This mill is to take the place of an old style mill now operated by this firm.

The large elevator connected with the Freeman flouring mill at La Crosse, Wis., filled with wheat for the first time since its construction last summer, yielded to the pressure May 6th, the walls spreading, and several hundred bushels of wheat escaped to the river. A force of men were engaged in dipping the grain

from the water and spreading it out to dry, but the current was so strong that every time the grain was loosened with the shovels large quantities of it floated off, and was lost. The total amount of loss is not stated.

Schneck & Sowers, millers at Ovid, Mich., have made an assignment.

Chas. Tiedeman, of O'Fallon, Ill., has ordered the Gray roller mill.

DIED—J. Thayer, miller at Skaneateles, N. Y., of the firm of J. Thayer & Co.

Messrs. Williams & Orton, of Sterling, Ill., are favoring Allis & Co. with their orders for rolls.

Bloomington Mill Co., Bloomington, Ill., have ordered six of the Gray Noiseless roller mills.

C. Metz, of East Liverpool, O., has ordered both porcelain and smooth iron rolls from Edw. P. Allis & Co.

Messrs. Lindeke & Co., St. Paul, Minn., have ordered a line of reduction rollers from Edw. P. Allis & Co.

Mazeppa Mill Co. have placed their order for 24 of Gray's Noiseless roller mills with Edw. P. Allis & Co.

Forest Mills, of Forest Mills, Minn., have placed their order for a line of six sets of rolls with E. P. Allis & Co.

Homer Baldwin will now use porcelain rolls, having placed his order for the necessary number with Edw. P. Allis & Co.

Jones & Co., New York City, are increasing their capacity by an additional 4 sets of Gray's rolls from Edw. P. Allis & Co.

Johnson & Jarrett, of Des Moines, Iowa, have seen it to their advantage to place their order for rolls with Edw. P. Allis & Co.

Benight, of the firm of Benight & Colt, millers at Easton, Mo., has retired from business. The firm is now Colt Bros. & Co.

R. Ruston, Evansville, Ind., is adding to his capacity with Gray's patent rollers, with the Edw. P. Allis & Co. patent sharp dress.

Huntley, Holcomb & Heine order corrugated rolls from Edw. P. Allis and Co. for their customers, Benton, Ayers & Co., at Conneaut, Ohio.

Hulbert, Seaman & Co., of Itaska, Minn., have ordered eight of the Gray Noiseless Roller machines, with the Allis patent sharp corrugation.

Wysor, Kline & Co., Muncie, Ind., have placed their order for porcelain and corrugated rolls with Edw. P. Allis & Co., using the sharp corrugation.

Sidle, Fletcher & Holmes, of Minneapolis, are introducing the porcelain roller in their mill for their purified middlings. Ordered from Edw. P. Allis & Co.

C. A. Gambrell & Co., Baltimore, Md., have placed their order with Edw. P. Allis & Co. for the Gray roller, with Edw. P. Allis & Co.'s patented sharp corrugation.

E. E. Freed & Co., of North Wales, Pa., have contracted with Edw. P. Allis & Co. to change their entire mill to the roller system. Capacity, 150 barrels a day.

Otto Troost, of Minnesota City, Minn., is increasing his capacity by an additional line of the Gray roller mill, with the Edw. P. Allis & Co. patent sharp dress.

Geo. T. Jackson, of Augusta, Ga., is introducing the Gray rollers in his mill, both porcelain and corrugated, with the Edw. P. Allis & Co. patented sharp dress.

Messrs. Barney & Kilby, E. P. Allis & Co.'s special agents at Sandusky, O., have sent in the following order for their customer: Six Gray roller mills for R. H. Haywood, Venice, Ohio.

John A. Thompson, of Edinburgh, Ind., has placed his order for porcelain and corrugated rolls with Edw. P. Allis & Co., having become convinced that, for soft wheat, sharp corrugations should be used.

The La Grange Mill Co. have left their order for the rolls for the other half of their mill at Red Wing with Edw. P. Allis & Co., using about fifty of the Gray roller machines in all. The Edw. P. Allis patented sharp corrugation is used exclusively.

J. K. Mueller & Co., of Denver, Col., has contracted with Edw. P. Allis & Co. for the rolls and necessary machinery for changing their mill to a capacity of 250 barrels in 24 hours, using the Gray frame and Edw. P. Allis & Co.'s patent sharp corrugation.

Messrs. Hickox & Co., Cleveland, Ohio, have accepted the plans from Edw. P. Allis & Co. for their new eight-hundred-barrel roller mill, and are now busily at work on the building according to the plans furnished. This mill will contain about fifty roller mills, and is

expected to be one of the finest in the country.

E. W. Pride, representing John T. Noye & Sons, at Neenah, has the contract for a full line of Stevens' rolls, to be placed in the mills of F. Labbs & Bros., Oshkosh, Wis.; also the order for bolting cloth, cement, beltings, etc. The millwright work will be under the able management of Mr. John Johnson, of Neenah, who will commence operations on the mills at once.

Messrs. Kidder Bros., of Terre Haute, Ind., have contracted with Edw. P. Allis & Co. to remodel their mill entirely, and to refit it on the Hungarian roller system, embracing the Gray roller mill, with the Edw. P. Allis & Co. patented sharp corrugation. The capacity will be 300 barrels per day, and the changing and starting will be under the supervision of Wm. Faist, roller miller for Edw. P. Allis & Co.

A letter recently received from a party in the American flour trade in Glasgow, Scotland, says: "The trade in flour is demoralized by consignees. New agencies are opening out every day, some of them not worth £500. Their poverty obliges them to sell the flour as soon as it arrives at whatever figure they can get. The bakers just lie back for these offerings and quietly take them." A party in the trade here says that American millers are just cutting their own throats by consigning flour to irresponsible men who cut the trade.

The heirs of Caleb Cushing, through a legal representative, have made a proposal to sell the water-power property at St. Croix Falls, covering four or five miles of river shore on the Wisconsin side and about one mile on the Minnesota side, besides most of the village of St. Croix Falls, which proposal is likely to be accepted by parties represented by Hon. D. M. Sabin. These parties have already bought the Taylor water-power property which with the Cushing property, will give them five or six miles of the river, both shores, enabling them to use the river three times over if desired. It is said these parties are to invest \$1,000,000 in early improvement of the water-powers.

THE WHEAT MEAL PURIFIER.—This machine wherever it has been introduced gives the best of satisfaction. Among the parties who have put the Wheat Meal Purifier, manufactured by the Wheat Meal Purifier Co., of Minneapolis, Minn., into their mills in the past few weeks, are the following: H. C. Jaeger, Kane, Ill.; F. M. Haley, Hillsborough Tex.; Kimball & Beedy, Forest City, Minn.; James Trull & Son, Macomb, Ill.; J. B. Hicks, La Grange, Ohio; Allan Bowman, Blair Ontario, Canada; Wm. Weigel & Co., Hoyleton, Ill.; White Bros., Warrenton, Pa.; Homer Baldwin, Youngstown, Ohio; G. W. Graham, Carbondale, Ill.; M. Starr, Lakeport, Cal.; Baily & Rush, Marengo, Ia.; Kennesaw Mill Co., Marietta, Ga.; McWilliams Bros., Manor Station, Penn.; Camp, Seiger & Beebe, Union City, Penn. The prospects are that this machine will be very extensively introduced, as it is not expensive, runs light, is easy to locate and operate, and does not interfere with any system of milling, but is a great help to all.

A New Lincoln Story.

When Lincoln was practicing in the old Sangamon County Court House, in the days of the old-fashioned flat seats, a tall, slim lawyer, noted for wearing a very short coat, slid along on the seat to be nearer the advocate addressing the jury. A protruding nail tore the seat of the lawyer's pantaloons. Obligated to follow his opponent immediately there was no time to sew up the rent in the garment. A legal wag present wrote a subscription paper: "We, the undersigned, agree to pay the sums set opposite to our several names for the purpose of purchasing Brother Brown a new pair of pantaloons." Several of the lawyers put down sums ranging from 50 cents to 10 cents. The paper was presented to Lincoln, who sat opposite the rear of the advocate, who, bending over in gesticulating, made quite an exposure. Lincoln took out his pencil, and wrote upon the paper: "I have nothing to contribute to the end in view." The lawyers roared with laughter, the Judge asked to see the paper, when he, too, in turn, had to roar. All this time the unconscious victim of the fun was ignorant of the cause of the laughter, and at last joined in the merriment.

"WHERE are you going?" said a young gentleman to an elderly one in a white cravat whom he overtook a few miles from Little Rock. "I am going to heaven, my son. I have been on my way for eighteen years," "Well, good by, old fellow! If you have been traveling toward heaven for eighteen years, and got no nearer than Arkansas, I will take another route."

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MARK TWAIN, having been asked to contribute to a newspaper issued at a fair in aid of abused children in Boston, wrote: "Why should I want a Society for the Prevention of Cruelty to Children to prosper, when I have a baby down-stairs that kept me awake several hours last night with no pretext for it but a desire to make trouble? This occurs every night; and it embitters me, because I see how needless it was to put in the other burglar alarm, a costly and complicated contrivance, which can not be depended upon, because it's always getting out of order and won't 'go,' whereas, although the baby is getting out of order, too, it can nevertheless be depended on, for the reason that the more it gets out of order the more it does go. Yes, I think the idea of it is all wrong; but if you will start a Society for the prevention of Cruelty to Fathers, I will write you a whole book."

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Boots, Shoes, Coats, Cloaks, Gloves, Combs, Balls, Dolls, Bands, Hats, Penholders, Inkstands, Door Mats, Door Springs, Toilet Sets, Horse Covers, Wagon Covers, Plant Sprays, Umbrellas, Toilets, Belting, Packing, Hose, Mirrors, Sheetings, Diapers, Syringes, Tubing, Brushes, Jewelry, and everything else made of Rubber

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This boiler cannot explode. Gives most steam for least money, and its durability is established by three years' service without repairs.

Engineers and steam users are invited to send for descriptive circulars.

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TROY BOLTING CHEST.

Pat. Aug. 31, 1875, No. 167,362, by Swisher & Campbe
Manufactured and Sold by

E. P. CAMPBELL,

MILL AND ELEVATOR BUILDER.

I will send my neat circular, describing my plan for bolting in mills, grinding low, half-high or high, for two 3 cent stamps. Send for my illustrated circular and price list. Address

E. P. CAMPBELL,

Greensburg, Ind.

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Northwestern Mill Bucket Manufactory

310, 312, 314 FLORIDA STREET,

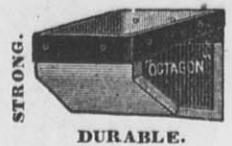


Is furnishing Mills and Elevators in all portions of the Country with their superior BUCKETS. They are UNEQUALLED for their SHAPE, STRENGTH and CHEAPNESS.

Leather, Rubber, Canvas Belting and Bolts at lowest market rates. We have no traveling agents. Sample buckets sent on application. Large orders will receive liberal discounts. Send for sample order.

Address all inquiries and orders to
L. J. MUELLER, 197 Reed St., Milwaukee.
[Mention this paper when you write us.]

Wm. E. Catlin & Co., C. O. D. Mill Furnishers, No. 63 Lake St, CHICAGO ILL.



Catlin's Octagon Bucket.

BEST MILL BUCKET IN THE WORLD.

The ends of these buckets are fastened by a double fold. The bands double lap the ends, leaving the front of the bucket smooth. If you have not used them, please give them a trial.

TIN.		IRON.	
2 1/2 x 2 1/2	5 Cents	4 x 3	8 Cents
3 x 2 1/2	5 1/2 "	4 x 3 1/2	9 "
3 x 3	6 "	4 1/2 x 3 1/2	10 "
3 1/2 x 3	7 "	5 x 3 1/2	11 Cents
		5 x 4	12 "
		5 1/2 x 4	13 "
		6 x 4	14 "
		6 x 4 1/2	15 Cents
		7 x 4 1/2	16 "
		8 x 5	18 "
		9 x 5	20 "

SPECIAL FIGURES ON LARGE QUANTITIES. SAMPLES FREE.

Odd sizes made to order. A large stock of "Octagon" Mill Buckets always on hand.

UNSOLICITED TESTIMONIALS.

I received my "Octagon" cups to-day. Am well pleased. J. M. BURKHOLDER, Casstown Mills, O.

The "Octagon" buckets you sent us have just arrived. We are fully pleased. They are strong and durable—the very kind we want—and at one-third the cost of as good an article here. JAS. CAMP, Fort Jones, Cal.

Your "Octagon" cups meet the approbation of all millers. They have been paying double your price for an inferior article. Wm. A. McMULLEN, Traveling Salesman.

We have been buying our buckets of— but we like the looks of your "Octagon." Please send us the following— HARDESTY BROS., Canal Dover, O.

The "Octagon" buckets came to hand and look equal to sample sent us before ordering. UNION MILLS FLOURING CO., Van Wert, O.

Please find enclosed draft for the "Octagon" buckets ordered on the 16th inst. They do their work nicely, and we are well pleased with them. STRAUS, ELSTON CO., Marietta, O.

"Octagon" buckets ordered the 14th and billed the 18th, just received. We are well pleased with them and will order another supply ere long. MITCHELL & BROWN, South Toledo, O.

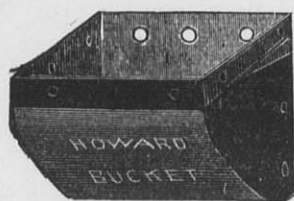
We received your "Octagon" elevator bucket, and like it very well. Send us— MOON & BLACK, Diana, Ill.

We like the form of your "Octagon" cups better than any other, so does our millwright. J. SHOUTZ & SON, Bloomville, O.

We received your "Octagon" which we think is a real good cup. Please send us the following— H. J. SOMMER & BRO., Canton, O.

Enclosed find draft—for "Octagon" cups ordered last week. They are all right. T. W. STANTON & SON, Waupun, Wis.

We got some "Octagon" buckets of you last year, and now we want some more. Please ship us as follows— HOOD & BRADLEY, Belmont, N. Y.



Catlin's Howard Bucket.

This bucket is made entirely of one piece of metal. It is octagon shape, very smooth, neat and extra strong. They are acknowledged to be the most perfect warehouse bucket made.

I received the "Howard" bucket from your firm. I like the shape and manufacture of them first rate. When I built I had my buckets made to order, but they were much inferior to yours and cost more money. H. W. HOAG, Delevan Steam Grain Elevator, Delevan, Wis.

Quite a number of parties to whom we have furnished plans for elevators, are using the "Howard" bucket: they are well liked. CHASE ELEVATOR CO., Chicago, Ill.

We also manufacture to order four other styles of Elevator Buckets, and can make it to your interest to correspond with us when wanting buckets for any purpose.

MILL PICKS.

60 cents per lb. Discount..... per ct.

WOOD CONVEYOR FLIGHTS.

75 cents per 100. Discount..... per ct.

ELEVATOR BOLTS.

85 cents per 100. Discount..... per ct.

Order from this advertisement, and if the goods and prices are not satisfactory they can be returned at our expense.

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63 Lake St., Chicago, Ill.

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Plans, Specifications and Estimates made for all kinds of

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Call your attention to the following REASONS WHY, if about to make a Journey to the GREAT WEST, you should travel over it:

As nearly absolute safety as is possible to be attained. Sure connections in UNION DEPOTS, at all important points. No change of cars between CHICAGO, KANSAS CITY, LEAVENWORTH, ATCHISON or COUNCIL BLUFFS. Quick Journeys because carried on Fast Express Trains. Day cars that are not only artistically decorated, but furnished with seats that admit of ease and comfort. Sleeping cars that permit quiet rest in home-like beds. Dining cars that are used only for eating purposes, and in which the best of meals are served for the reasonable sum of seventy-five cents each. A journey that furnishes the finest views of the fertile farms and pretty cities of Illinois, Iowa and Missouri, and is afterwards remembered as one of the pleasant incidents of life. You arrive at destination rested, not weary; clean, not dirty; calm, not angry. In brief, you get the maximum of comfort at a minimum of cost.



That the unremitting care of the Chicago, Rock Island & Pacific Railway for the comfort of its patrons is appreciated, is attested by its constantly increasing business, and the fact that it is the favorite route with delegates and visitors to the great assemblies, political, religious, educational and benevolent, that assemble from time to time in the great cities of the United States, as well as tourists who seek the pleasant lines of travel while en route to behold the wonderful scenes of Colorado, the Yellowstone and Yosemite. To accommodate those who desire to visit Colorado for health, pleasure or business, in the most auspicious time of the year, the Summer season and months of September and October, the Company every year puts on sale, May 1st, at all coupon ticket offices in the United States and Canada, round trip tickets to

DENVER, COLORADO SPRINGS and PUEBLO,

At reduced rates, good returning, until October 31st. Also to San Francisco, for parties of ten or more, good for ninety days, at great reduction from regular fares.

REMEMBER, this is the most direct route for all points WEST and SOUTHWEST. For further information, time-tables, maps or folders, call upon or address

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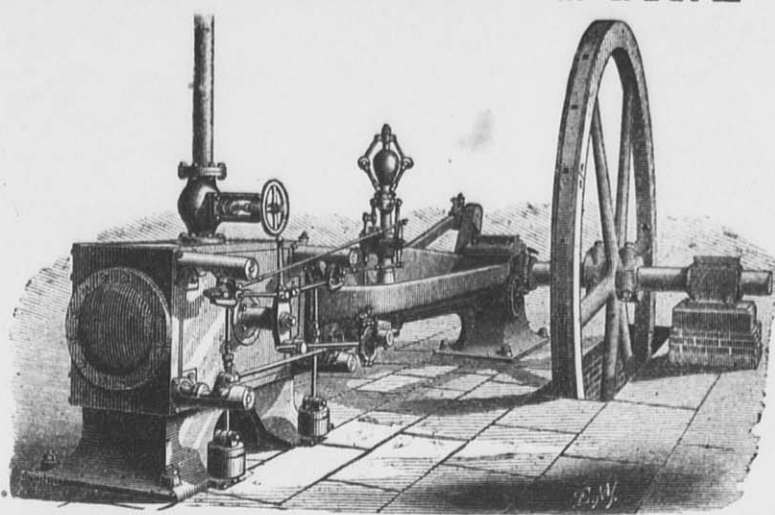
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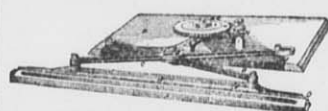
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ATLAS ENGINE WORKS, INDIANAPOLIS, INDIANA.

BUILDERS OF ALL CLASSES OF

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We build **The Best Farm Engines and Small Engines** for Warehouses and Elevators. [Mention this paper when you write us.]



DICKINSON'S PIONEER MILL-STONE DRESSER

Simple, Effective and Durable.

Price, with two large Diamonds.....\$50.00.

The undisputed success of the above machine by the universal satisfaction it has given has brought into existence numerous others of the like in principle, all having their respective advantages, and the subscriber is now furnishing Diamonds for all the Mill-Stone Dressing Machines in the market, with numerous cutting edges, at \$2 each and upwards. Diamonds sharpened. Send money with orders to

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J. DICKINSON, 64 Nassau St., New York.

HARRIS-CORLISS ENGINE,

BUILT BY

WM. A. HARRIS, Providence, R. I.

Built under their original patents until their expiration. Improvements since added, "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and "Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms.

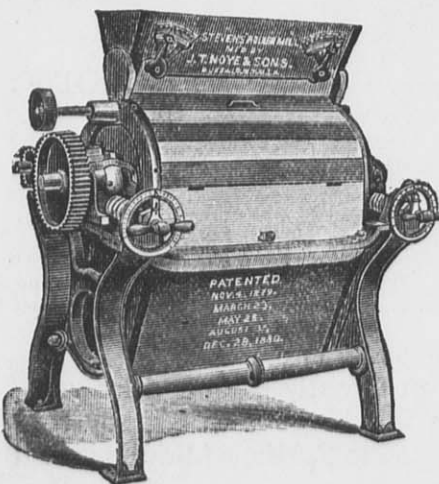
The Condensing Engine will save from 25 to 33 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine. The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Prop'r.

[Mention his paper when you write us.]

STEVENS' ROLLER MILLS.



There is no system of milling producing such good results as those effected by the Stevens Rolls. They granulate without cutting, therefore making broader bran without rasping the impurities—consequently purer middlings, all of which are much easier to purify.

No cut bran and middlings adhering together as is the case in results produced by other than non-cutting rolls. They remove cockle shell without cutting—it passing off with the bran. They remove every germ without cutting or mashing.

The frame and adjustments as now made are the most simple and effective in the world. The most inexperienced can set them absolutely correct, because the gauge and indicator tells their own story. This fact alone is of the greatest importance to the proprietor.

With it in his mill he is not so entirely dependent on the judgment of his miller who may be inexperienced, or possibly careless, which inefficiency or neglect may daily cost a great deal of money. Have now got the best belt movement out, and can furnish either the belt or gear machine.

Millers come and see for yourselves. Can take you through any number of mills that are free for your examination from cellar to garret.

I also keep on hand a full supply of staple mill furnishing goods. Bolting cloths made up in best manner on short notice. Plans and specifications furnished.

Address or call upon

E. W. PRIDE, Neenah, Wis.

Representing Jno. T. Noye & Sons, Buffalo.

[Please mention this paper when you write us.]

MILL FOR SALE.

A four-run Custom and Merchant Water Power Mill. Before you buy elsewhere write to LOCK BOX C, Brittain P. O., Summit Co., O.

Mill Property For Sale.

A Mill in Sheboygan County, Wis., with a large custom trade, unlimited water power, and four run of stone. Will be sold on reasonable terms. Full information will be given at 106 West Water Street, Milwaukee, Wis.

Mill For Sale on Easy Terms.

A steam grist mill, with four run of buhrs, separator, smutter, purifier and bran duster—all latest improved machinery. It is in a good wheat growing country. For particular apply to the owners, LANDIS & HOLLINGER, Sterling, Kansas.

FOR SALE CHEAP.

A four-run Custom and Merchant Flouring Mill; all in good repair. Good water power, 12 1/2 feet head. This mill has a first-class reputation for doing all kinds of work. It is located in a good wheat growing section. This property positively must be sold. For further particulars call on or address

HOLT BROTHERS, North Lake, Waukesha Co., Wis.

FOR SALE.

A Flouring Mill of the latest improved gradual reduction roller system, together with 50 acres of good land, good house and barn, located on the Iowa River, 8 miles northeast of Cresco, at Kendallville. The property must be sold, and a great bargain will be given. Death of my husband, S. S. Kendall, is the reason for offering the above property for sale. For further particulars address

MRS. S. S. KENDALL, Administratrix, Kendallville P. O., Winneskeo Co., Iowa.

Mill For Sale—A Rare Bargain.

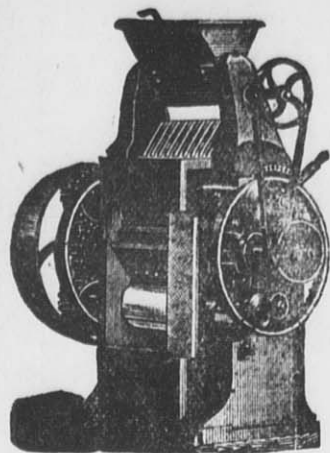
Desiring to turn my full attention to other business I offer for sale my Mill Property in Ripon, Wis. The mill is 40x60 and four stories high with additions 44x44 and 20x40, and cooper shop. Power: 30 feet head, 3 13-inch turbines, also 75 horse power engine with two boilers. Has 2 wheat stones, one middlings and a feed run, 2 purifiers, flour packer, separator, smutter, corn sheller, etc. Handsome dwelling house can be had with the mill. It has all conveniences and modern improvements. Good schools and colleges in the city. Any one desiring to go into the milling business, should not fail to examine this property. When you write me please mention the United States Miller. Address

H. B. BATEMAN, Ripon, Wis.

IMPORTANT NOTICE TO MILLERS.—The Richmond Mill Works and Richmond Mill Furnishing Works are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore, to save delay or miscarriage, all letters intended for this concern should be addressed with care to Nurdyke & Marmon Co., Indianapolis, Ind. [Mention this paper when you write us.]

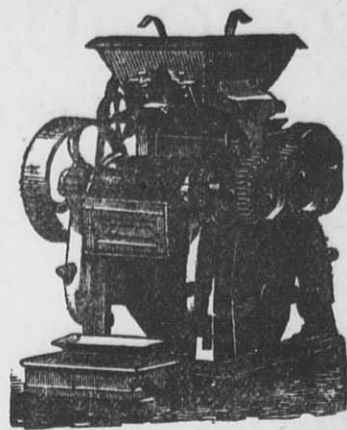
VIENNA EXHIBITION, 1873, Awarded Diploma of Honor.

PARIS EXHIBITION, 1878, Awarded 2 Gold Medals and 1 Silver Medal.



GANZ & CO., Iron Foundry and Manufacturing Association,

Buda-Pesth, Hungary; or Ratibor, Germany.



We take this method of recommending to the American milling public our PATENT ROLLER MILLS with chilled cast iron rollers, for crushing and grinding wheat, which have met with such eminent success in Europe. The mill-owners of BUDA-PESTH, as well as the prominent millers of Austro-Hungary, and a large number in Southern Germany, Switzerland and England, have provided for their mills the celebrated GANZ ROLLER MILLS, which are about to supplant entirely grinding on mill-stones, their working being more perfect, producing more white flour, requiring less power than the best mill-stone, and wanting no repairs excepting to occasionally replace a bearing. We have introduced into the art of milling these Roller Mills with chilled cast iron rollers, and from 1874 to January, 1879, we have delivered in the different European countries, Africa and the United States of America about 2,100 mills, and all work satisfactorily. Our crushing mills may now be regarded as absolutely necessary for every well-furnished modern mill, and this is proven by the numerous testimonials at hand. Our grinding mills are remarkable for their absolute discharge bearings, by means of the newly-devised Anti-Friction Pressure Rings. These Rings allow a very high pressure, and hence assure the performance of a great deal of work, avoiding all waste of power caused in other machines by friction in the bearings.

Out of numerous testimonials at hand we select the following:

BUDA-PESTH, March 28, 1878.—To Messrs. Ganz & Co., Foundry and Engineering Co., Limited, Buda-Pesth: Complying with your request to communicate to you my experience with your Roller material, I have pleasure in stating that I consider it, &c., your generally well-famed chilled iron, as the best within my experience, and its adoption has satisfied me in every respect, so that I do not hesitate to assert, by introducing it on a large scale, you have rendered a considerable service to the milling art. Your material is equally well adapted for rough grinding, softening or grinding. Owing to its great hardness I cannot characterize it otherwise than indestructible. The grooved cracking rollers have demonstrated this hardness, as also a toughness, of your castings in a manner which astonishes all who know the rapid wear of cutting edges used in the treatment of grain. Your smooth rollers, once properly ground, preserve their complete cylindrical form, and do not require any repairs for a period which even now cannot be estimated. They acquire, soon after being put to work, a finely-gritted surface texture, eminently adapted for grinding as well as for drawing down the meal, a condition which they preserve without change. It is quite superfluous to prove that there can be absolutely no question of discoloring unless with reference to new rollers, to which some remnants of oil, emery or other matter may yet adhere. The flour produced by your Chilled-Iron Rollers is very lively and has remarkable baking qualities. While stating the above to the best of my conviction in answer to your inquiry, I seize with pleasure this opportunity to express to you my thorough approbation, not only of your roller material, but also generally of your roller mill construction. Your rough grinding (cracking) with chilled-iron roller mills constitutes such an essential step in advance as compared to the rough grinding with stones, that they cannot fail to win their way into every well-built mill, working on the high or half-high grinding system. For the purposes of reduction to flour you have lately erected a form of mill which I consider extraordinarily successful. You have by the introduction of an entirely new mechanical organ, i. e., the Rotary Anti-friction Spring Pressure Ring, solved the problem of discharged bearings, which has so often been raised and as often dropped again unanswered. You have achieved success with decided aptitude in a manner as wondrous as it is simple and practical. This Roller Mill absorbs, in fact, only just the power required for the reduction into flour, and none for bearing friction which, usually, as is well known, amounts to a high figure. This Flour Mill receives an agreeable and light form while attaining a capacity hitherto unknown. In handing you the above communication for use as you may deem desirable, I remain, etc.,

(Signed) C. HÄGGENMÄCHER, Director of the First Ofen-Pesth Steam Mills.

TIVOLI KUNSTMUEHLE, Munich, April 5, 1878.—To Messrs. Ganz & Co., Engineers, Buda-Pesth—Dear Sirs: In reply to your esteemed of March 28, we have pleasure in testifying to our satisfaction with the Chilled-Iron Rollers

Address all communications to

GANZ & CO., Buda-Pesth, Hungary.

Cable Address "GANZ, Kaiserbad."

Or GANZ & CO., Ratibor, Germany.

Or THROOP GRAIN CLEANER CO., Auburn, New York.

[Mention this paper when you write us.]

supplied to us by you. We have now had both smooth and fluted Rollers in use for the last two years, and have not found any appreciable wear in the smooth rollers. With reference to the work and capacity we can but report favorably. The flour produced by them is lively, and not killed as has been stated in some quarters, while its baking properties are first rate. Referring to the lately supplied fluted rollers, Meckwart's patent, grooved on the new method, they work admirably and are especially to be recommended for mellow wheats. Recapitulating, your Roller material is as tough as it is hard, and therefore in every way adapted for the purpose it is intended. We remain,

Tivoli Kunstmuehle, A. MUELLER.

BUDA-PESTH, July 16, 1877.—Messrs. Ganz & Co., Buda-Pesth—Gentlemen: The most satisfactory results which, on testing the different Wheat-breaking Machines, we obtained from your Fluted Rollers, induced us to adopt your system and, in consequence, we already provided our mill with a great number of your Breaking-Rollers. In consideration of the experience derived from use of these Rollers we beg to point out as particular advantages of your Wheat-breaking System that extremely little flour is produced, provided the rollers are used as directed, that your Rollers most satisfactorily detach the Semolina from the Bran, and thoroughly separate the Germ Particles, and finally that they are of an astonishing durability, and that it requires no skilled labor to manage them. Moreover it must be stated that your system suits perfectly well any process of Breaking-Wheat. It affords us so much more pleasure to give you the above account, as we are inclined to think that by the construction of these Rolls you have achieved an essential progress in the milling industry. Yours truly,

PESTER WALZMUEHL-GESELLSCHAFT. Riedle, m. p. Burchart, m. p.

BUDA-PESTH, July 11, 1878.—Messrs. Ganz & Co., Engineers, Buda-Pesth—Dear Sirs: Having had occasion to try your newly patented Roller mills with others, known until now, I feel induced, regarding their excellent qualities to give orders for furnishing me the Roller mills to be erected in my two mills. These roller mills are to be recommended by their construction, surpassing all known until now, and especially for their remarkable capacity, doing much work with little power. Believe us, gentlemen, Yours truly,

HEINR. HÄGGENMÄCHER.

BRANDERS A. ADLER, Bohemia, February 13, 1879.—Messrs. Ganz & Co., Buda-Pesth—Gents: I give you my best thanks for your delivering to me your well-made and well-working machines, as well as for those 2 machines you delivered me last year. I have no objection to your publishing this. Yours faithfully,

G. HANNAK, Civil Engineer and Mill-owner.

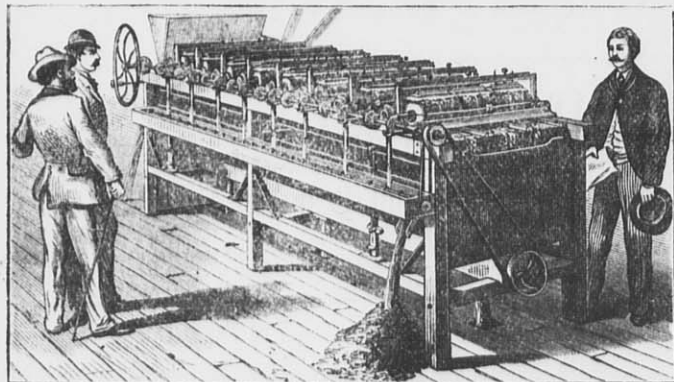
ELECTRIC PURIFIER CO.,

OF

New Haven, Conn.

Factory, NEW HAVEN.

New York Office, 17 MOORE ST.



This Company was organized in New Haven, on the 1st of March, 1881, with a capital of \$300,000, to manufacture and sell ELECTRIC MIDDINGS PURIFIERS, having purchased the Smith-Osborne Patents granted by the United States, Great Britain, France, Belgium, Austria and Canada.

The Company is now ready to execute orders. One of the Purifiers was put into the Atlantic Mills, of Brooklyn, soon after the first patent was issued on February 17, 1880, and has been in almost constant practical use since, demonstrating beyond a question that it possesses the following advantages:

It Purifies Middlings Absolutely Without Waste.

It Purifies Middlings with Greatly Reduced Power.

It Purifies Middlings with Greatly Reduced Space.

It Purifies Middlings with Greatly Increased Rapidity.

It Purifies Middlings from Spring and Winter Wheat Equally Well.

It Purifies Middlings with the Very Best Results.

It Dispenses with the Use of All Air Blasts.

It Dispenses with the Use of all Dust Houses.

It Dispenses with the Use of all Dust Collectors.

It Dispenses with the Use of Sieve Brushes and Cleaners.

It Dispenses with the Dangers of Explosions and Fires.

It Purifies all Dust House Material.

It Purifies the Finest Middlings.

It is Excellently Adapted to Manufacture Farina.

IT IS REMARKABLY ADAPTED TO CUSTOM MILLS.

We start our enterprise with FOUR PURIFIERS in operation in the Atlantic Mills, Brooklyn, New York, and with several orders from different parts of the country. We are to have a Machine on Exhibition at the London International Exhibition to be held in May next, under the charge of Mr. J. W. Throop, of London.

Samples of work will be sent upon application by mail, and all inquiries answered from the New York office.

The machines in operation at the Atlantic Mills are open for inspection, and millers are invited to examine critically their workings and results.

In the month of April the General Manager will visit the PROMINENT MILLING POINTS OF THE WEST AND NORTHWEST, prepared to exhibit the NEW INVENTION and take orders.

Parties contemplating building new mills or reconstructing old ones, should see the superior working of the Electric System before making contracts for Purifiers elsewhere. New York, March 14, 1881.

JOHN RICE, General Manager.